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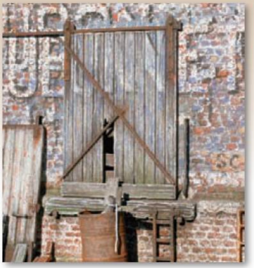

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Editor: Ken Jones
Military Modelling, PO Box 6017,
Leighton Buzzard, LU7 2FA
Tel/Fax: 01525 370389
Email: ken.jones@magicalia.com

PRODUCTION
Designer: Richard Dyer
Commercial Designer: Ben Wright
Retouching: Michelle Briers & Chris Faulds
Production: Richard Baldwin & Simon Gould
Advertisement Production:
Robin Gray Tel: 01689 899286
Leanne Turner Tel: 01689 899287

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Tel: 01689 899288
Email: chris.webb@magicalia.com

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CONTENTS

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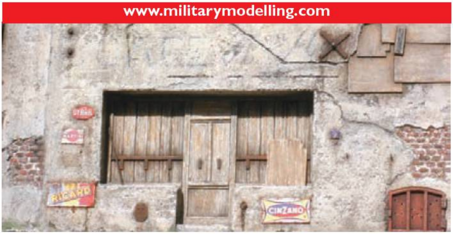


Emmanuel Nouaillier scratch builds very realistic looking small-scale buildings and shows how he does them beginning on page 44.

16
GETTING A REALISTIC FINISH
Jay Laverty weathers Bronco Models' 1:35 scale kit of the Humber Scout Car

24
A SHORT HISTORY OF THE HUMBER SCOUT CAR
Dick Taylor with background info for modellers of Bronco's kit

30
IRISH MODEL SOLDIER SOCIETY'S HALF CENTURY
News of the forthcoming Anniversary Show in Dublin

35
TAKING THE STRAIN
First in a two-part feature by Chris Johnson on the development of and modelling the Ram ARV Mark II in 1:35 scale

44
REALISTIC BUILDINGS AND FAÇADES
Emmanuel Nouaillier shows how to scratch build and age miniature structures

50
T-72B 'ROGATKA' – THE 21st CENTURY URALS TANK
Cookie Sewell with the first of a two-part feature on the history and modelling of the upgraded Russian T-72 Main Battle Tank

62
PLATE AND MAIL ARMOUR
Stephen Mallia shows his method for getting realistic look metal finishes on white metal figures

64
GENGHIS KHAN
Adrian Hopwood assembles and paints Pegaso's 90mm mounted white metal figure kit

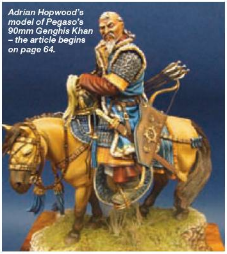
13
NOTICE BOARD
All the latest news for military modellers

15
DESPATCH
Readers' letters

32
SMALL SCALE SCENE
Column for military vehicle modellers

69
ON PARADE
Books reviewed

71
"ATTEN-SHUN!"
New products reviewed



Adrian Hopwood's model of Pegaso's 90mm Genghis Khan – the article begins on page 64.

COVER: Jay Laverty's Bronco 1:35 scale Humber Scout Car model gets the full weathering treatment beginning on page 16. Insets are the superb Iwata airbrush in Jay's hands weathering the Humber model and one of Emmanuel Nouaillier's realistic building façades from his article that begins on page 44.

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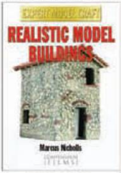

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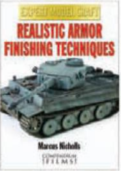

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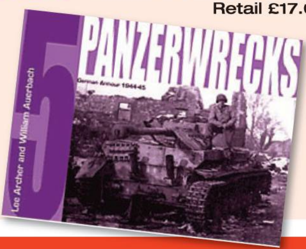

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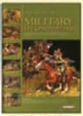
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MAFVA Nationals

The Cambridge Branch of the Miniature Armoured Fighting Vehicle Association is pleased to announce that they will be hosting the MAFVA Nationals 2008 at the Imperial War Museum, Duxford on Sunday 15th June. As in previous years the day is shared with Duxford's Annual Military Vehicle Show, the Military Book Fair and of course the regular exhibits and flying programme of the museum, all for the same entry fee. The Nationals will be housed in a large marquee, which will be filled with a mix of club stands and a wide variety of traders, as well as the competition tables. Setting up will be possible on the Saturday, when visiting vehicles will also be arriving. Gates open to the public at 10am on the Sunday. For more information and trader details visit www.mafva.org.uk or send a large SSAE to the organizer, Paul Middleton, 39 The Leas, Baldock, Herts SG7 6HZ.

Southern Expo 2008

After last year's hiatus Southern Expo is back on 15th and 16th March 2008, the show will be open from 10am to 5pm on both days. As before the show will be held at, Hornchurch Sports Centre, Harrow Lodge Park, Hornchurch Road, Hornchurch, Essex RM11 1ET. Admission is Adults £3, Children & Senior Citizens £1. Nearest Underground Station is Hornchurch (District Line). Nearest Mainline Stations: Romford or Upminster. Bus routes: 193, 365 or 248, 370. By car the venue is four miles from M25 Junction 28 or 29. Free Parking. For more information email us at southernexpo@tiscali.co.uk or visit the Website http://myweb.tiscali.co.uk/southernexpo

Illawarra Scale Model Expo

The Illawarra Plastic modellers Association (IPMA) will be holding the 2008 Illawarra Scale Model Expo incorporating the NSW Scale Model Competition on 3rd and 4th May 2008. This will be held as usual at the Koonawarra Community Centre, Fowler's Road Dapto (South of Wollongong) N.S.W. Australia. For more information please visit http://ipma.hobbyvista.com/ or contact Paul Boger Tel: 0423108993 or email Paul at sea.eagle@optusnet.com.au

MAFVA Website move

Due to circumstances beyond their control the Miniature Armoured Fighting Vehicle Association Website has had to move and can now be found at www.mafva.net MAFVA request everyone to please adjust his or her links to match and apologize for the inconvenience.

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BMSS AGM

The Annual General Meeting of the British Model Soldier Society will be held on Saturday, 16th February at 'Living Space', Waterloo Road (about a quarter of a mile from the station) from 1 pm. As usual, in addition to the formal meeting there will be demonstrations and bring and buy stalls. For further information on the AGM and on joining the Society, please contact the Treasurer, Paul Newman, Tel: 01895 832757.

Maryport MAFVA

The Maryport branch of the Miniature Armoured Fighting Vehicle Association meet three times a week at the Fleming Place Social Club, Fleming Square, Maryport in Cumbria. The age group of the branch varies from 8 to 80! The opening times are 7.30pm until 10pm,on Tuesdays, Thursdays and 12pm until 3pm on Sundays. All aspects of modelling are catered for. Anyone interested in coming along will be made very welcome.

'Military in Miniature'

The Aldershot Branch of the British Model Soldier Society will be holding their Annual Show, 'Military in Miniature' at the Princes Hall, Aldershot on Saturday 1st March 2008 from 10.30am until 4.30 pm. This is a well-established event in the military modelling calendar at a pleasant venue in the centre of the town, easily accessible and with plenty of car parking adjacent. There is on-site catering and a bar. The show will include the traditional mix of displays; trade stands and open competitions covering all aspects of military modelling. There is also a class for non-military subjects including fantasy figures. As well as the Show, the Aldershot Military Museum is not far away and is well worth a visit. The Aldershot Branch has a regular display there and the Museum currently has a special display entitled, 'Military in Miniature'. For further information, please contact the Show organizer,
Andy Dunstan Tel: 01483 852398.

WMMS 2008

Next year's West Midland Military Show is the 31st annual event organized by the Alumwell Wargames Society and will be held on Sunday, 9th March 2008 at the Aldersley Leisure Village, Aldersley Road, Wolverhampton. The venue is just off the main A449 road, south of Junction 2 on the M54 motorway. (Follow the signs for Aldersley Leisure Village). The doors are open 10am to 4pm to a modern venue with excellent facilities and car parking. The Show continues with its usual mix of 50 plus trade stands, a 'bring-and-buy' and over 20 wargames, model and living history displays. Bar and catering facilities are available at the venue. Entrance fees are: adults £2.50; children £1; family ticket £5. Further details on the Show from David Jarman, Show Treasurer, 74 Chillington Drive, Codsall, Wolverhampton WV8 1AU,
Tel: 01902 847900 or Paul Yates, Show Secretary, 14 Hillside Road, Great Barr, Birmingham B43 6NG, Tel: 0121. 3582900.

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● Military Modelling magazine's Magicalia Website went on line at the beginning of this year to give everyone easy access to extra features and facilities to the established monthly magazine. It's the ideal place on the Internet to display pictures of your models and somewhere you can discuss the hobby with others on the forum and have your say… You may even find some pages selected from early Military Modelling magazines that will show how much the hobby has changed over the years. Why not give it a try today!

● Additions are constantly being made to the new Website and we listen to your suggestions for improvements and additions that will help us give you what you'd like to see. There are benefits for subscribers to Military Modelling magazine and also for those who intend to become subscribers. It's never been easier to subscribe to Military Modelling magazine and you can do it on line – a facility especially useful for readers outside of the United Kingdom.

● The Web Editor is Vinnie Branigan, who is an active modeller and you can see his work on line. He also runs the lively forum and presents announcements and reviews of new products – figure and AFV kits, books, materials and displays the latest news items about events and shows that he and others have attended, and also what's happening in the military modelling world.

● You can sign on the Military Modelling Website today – as we say it's only a click away… you simply fill in your name and details to register and then have a look around the site. Maybe you can let us know what you think first visit, and post some suggestions, which will be welcome because YOUR input is valuable to us. We anticipate you may have plenty to say and we welcome your views…

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Despatch

Readers' Letters and E-mails

- **The Editor welcomes readers' letters and e-mails for publication which must always be accompanied by the writer's full name and address. The address will be published in full if the letter or e-mail is interpreted as a request for information to the readership. Otherwise, only the writer's full name will be published.**

- **Letters and e-mails are not, under any circumstances, altered or severely edited; however, they may be shortened because of space limitations. The Editor is not necessarily in agreement with the views expressed in published readers' correspondence.**

- **Letters and e-mails to the Editor intended for publication should be addressed to:**

The Editor
'Despatch'
Military Modelling

PO Box 6017
Leighton Buzzard
LU7 2FA

- **E-mail: ken.jones@magicalia.com**

It's the content that counts...

Dear Ken,
I have just read the letter re the poll on 'paper magazine's in 2nd November's *Military Modelling*.

I don't normally write letters to editors in praise of magazines, however, I think that whatever the polls state *Military Modelling* is one of the best magazines out in the paper marketplace because of the quality of the articles that are published and I think that praise is long overdue for the guys that write such good pieces for *MM*.

I know that some may feel that *MM* is not as 'hip' in terms of photography, design or layout as some of the other mags out there, and this may well be true, however, it is the quality, thoroughness and integrity of the articles by such great modellers as Jay Laverty, Steve Zaloga, Rob Henden, Alex Hill, et-al, that make the magazine so important for us who are passionate about our hobby.

Yes, the other mags *look* great and have some really good articles too, and I do in fairness buy them probably in equal measure to *MM* based on what interests me in a particular issue, as I don't subscribe to any one or other, but it is the general consistency of good quality articles by the modellers such as those that I have mentioned that keep me coming back to *MM*.

Keep up the good work guys – your work is highly regarded - and appreciated.
Paul Kestenbaum

No Contest

Dear Ken,
Who are those people kidding? The ones who said *MM* was bottom of 'their poll' in paper magazines?

Like all self-appointed guardians of our tastes, legends in their own minds, their opinions like mine, are personal. But I will say one thing to you and all others who read this column and this good magazine, figure, vehicle or 'whatever modellers' you are, I would hold *MM* up against any military model magazine for quality of content – and this is where such poll results become 'No Contest' for me. Granted, we have choice of model magazines, but then what do you want? Fashion or fact?

MM articles are well written and illustrated and come from some of the best modellers around the world. Saying the magazine isn't as bright as the others is a totally irrelevant statement to me, and I would hazard a guess that a lot of us don't want all that 'puff' in the name of 'design' at the expense of good content. I certainly do not and I would rather that magazines stuck to good, solid and interesting material whilst also being a good read.

If you like to look at pictures of models and don't like to read about them – fine! But then, take a look at the latest *Military Modelling* Euro Militaire Special with excellent pictures of a selection of excellent models taken at the show by Adrian Hopwood. I was there, at Euro Militaire, saw the model and the choice of photographer and Editor (in my opinion) was very good. To heap criticism against *MM's* quality, in fact, simply insults the intelligence of (we) the readers who buy it or subscribe to it.

Best wishes from a satisfied reader and someone who enjoys his hobby.
Gerald Cunningham

'End of All Dreams'

Dear Sir
I have just recently switched from modelling aircraft to military vehicles in 1:35 scale and having read one of your magazines I have taken out a subscription. I find your magazine an excellent and informative read and I have found many useful tips. One can only hope to achieve the high standard of models featured in your magazine.

I have just received my copy of Euro Militaire 2007 and felt I must write to congratulate you on an excellent magazine. The diorama I felt most impressed by was Alan and Marrion Ball's 'End of All Dreams' and not only did I feel impressed by the skill of the modelling and painting, but also the enormity and brutality of the subject was overpowering and a Gold medal well-deserved.

Once again, thank you for an excellent magazine. I look forward to the next issue and may I also take this opportunity of to wish you and all your staff the best wishes for Christmas and a prosperous New Year.
Mr G.S. Jinks

Often cursed

Dear Sir,
I have just purchased the September issue of *Military Modelling* (it takes a little time to reach us here in Oz) and was pleased see the questions posed by young Timothy Collins.

I am not 12 anymore, but rather an aged retiree. I, too, have often cursed the old *PzKpfw, SdKfz* and *Ausf,* my interest being in armour, specifically WWII and North Africa. *Ausf* I have committed to memory as 'model' or 'variant', but the others were a mystery.

Thank you for the information, and all the best, Timothy.
Michael Brown
South Australia
e-mail

What is 'mainstream?'

Dear Mr Jones,
I note the letter from Mr Stevens (Despatch Issue 15) regarding 'non-mainstream' articles in *MM*. I would think that a vehicle like the Staghound of which hundreds served in the British Army is about as mainstream as it gets! I have no idea exactly what 'mainstream' is for a hobby that should encompass the whole of military history regardless of time and place, but our hobby cannot afford to stagnate with boring predictable articles in its leading magazine.

My personal inclination is for *MM* to studiously ignore the 'mainstream'. I want to be introduced to new uniforms, tanks, and history. This year I have made my first medieval knight and my first WW2 French tank (thank you Tamiya). For 2009 who knows? What I do not want is anything on German tanks, Napoleonic uniforms, Romans, or the American Civil War; made the model, done the conversion, bought the Osprey! Lets have multi-author, multi-page, in-depth articles on the greatest possible range of subjects!
Andrew Dalziel

Back Numbers

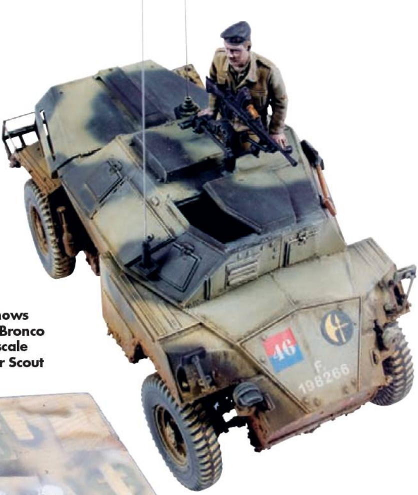
Dear Editor,
I am trying to get a copy of *Military Modelling* Issue No.12 that had detailed coverage of the Staghound armoured car and the Bronco 1:35 scale model after reading about some good comments about it on the Internet.

I don't usually buy *Military Modelling* magazine, or any other model magazine for that matter, preferring to go on line, but would like to get hold of this single copy because I am building the Bronco model and from what I've gleaned that particular issue could help me.

I can't get one anywhere and I am told that it is in short supply and there were not enough issues printed to go around?
Phil Stanley (e-mail)

*I have had quite a few similar e-mails about this very matter concerning **Military Modelling** Issue No.12 that is being dubbed 'The Staghound Special'. We printed our usual amount of the magazine that was published on 5th October, but it seems there was a run on that particular issue and, in old-fashioned terms, 'it sold out' and is no longer available from the usual outlets. Sorry! Ed.*

Getting a Realistic Finish

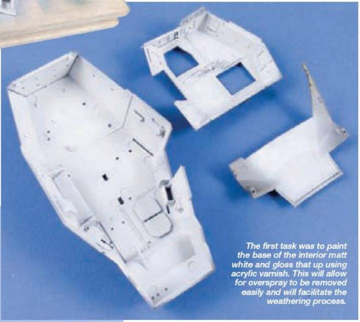


Jay Laverty shows 'how to' with Bronco Models' 1:35 scale British Humber Scout Car Mark I

ABOVE: As usual the trusty off-cut bit of wood is used to keep all of the sub-assemblies in place, and keep the parts from getting misplaced.

These are halcyon days indeed for injection moulded kits, as we are seeing an increasing number of subjects being released that were previously the exclusive remit of the resin producers of this hobby. I guess if you are one of those resin producers you wouldn't exactly refer to it as such a great thing though. That is not to say that the resin kits necessarily need replacing and in some cases the injection moulded plastic releases tend to be a far cry from the quality and detail of the previously available resin reproductions, but when it comes to the cost and availability the injection moulded kits score points there.

Bronco are relatively new to the modelling scene and this ambitious producer based in China has chosen to tackle primarily British subjects which makes for a breath of fresh air in a German World War Two 'subject heavy'



The first task was to paint the base of the interior matt white and gloss that up using acrylic varnish. This will allow for overspray to be removed easily and will facilitate the weathering process.

The chassis is a pretty impressive bit of engineering, and allows for yet another subassembly to be prepared prior to painting.

marketplace. One can only hope that they will be rewarded for their efforts in the form of robust sales.

This particular release from Bronco is the venerable Humber Mark I Scout Car, (Kit CB-35009) which saw wide service with the British Army during and after the Second World War. The markings options in the kit cover vehicles in service in Germany, England and Italy during WWII as well as a British vehicle serving in Malaya and a Danish Army vehicle both dated c.1950. For my model I have chosen the option for the 78th Infantry Division serving in Italy 1944 due to its exciting Mud/Blue Black camouflage scheme with White counter-shading that should make for one very striking little model.

Looks can be deceiving

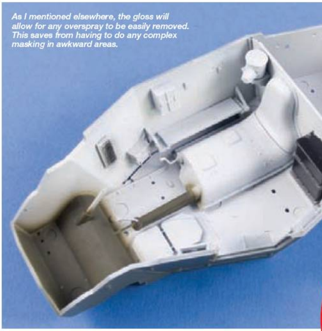
The quality of the moulding is superb throughout, and there are several places where this kit really shines. Sprue F covers weapons and various pieces if kit, and covers them superbly well. The level of detail on the weapons is astonishing for an injection moulded release, and if this sprue were to be released on it's own it would prove to be an invaluable asset to the spares arsenal. A continuing examination of the instructions reveals a very complex model considering its size, and a healthy amount intricately realized detail throughout the various stages of construction.

Curiously though, the majority of the detail is relegated to the interior of the vehicle, while several aspects of the far more visible exterior are left somewhat underdeveloped in my opinion. For instance the POW (Petrol Oil Water) cans are dreadfully moulded, and would be more at place on a Monogram release from the 1970s, whereas the engine is a wonderfully complex bit of engineering, complete with etched parts, that will be completely invisible on the finished model!

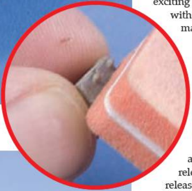
"Thanks for letting me know!"

Construction begins with the substantially detailed fighting compartment, which will thankfully be quite visible through doors and hatches should one wish to model them such. This area will also benefit from additional detailing as well, and wiring, for example, would not be a difficult task considering all of the major details are there to be added onto. Continuing with the engine compartment reveals the same level of detail and again the addition of extra detail would greatly enhance the appearance of this area, however, unless one is willing to extensively rework the hatches to model them open this would be a largely fruitless task.

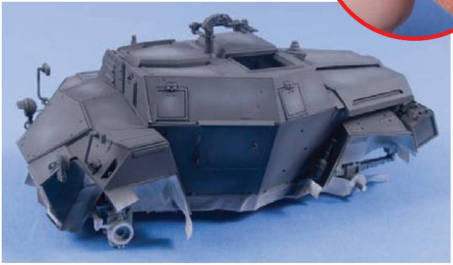
When the build continues to the exterior and firstly to the suspension, the high level of detail on the components continues with the excellent suspension and leaf spring assembly. One thing to watch out for and take note of is the fact that at this point the instructions call for the addition of the spare wheel hub to the hull, however, this should only be added to post war variants, so at this point you need to decide which example is being modelled, if that hasn't been decided.



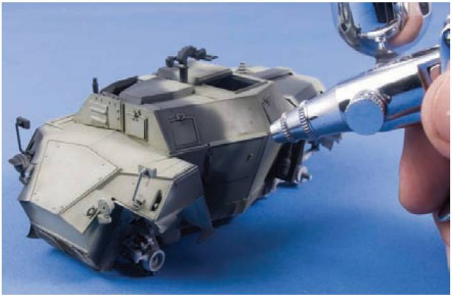
As I mentioned elsewhere, the gloss will allow for any overspray to be easily removed. This saves from having to do any complex masking in awkward areas.



INSET RIGHT: When I eventually noticed the etched parts to improve the POW cans, the moulded-on detail was removed and polished smooth using MasterCasters' sanders.

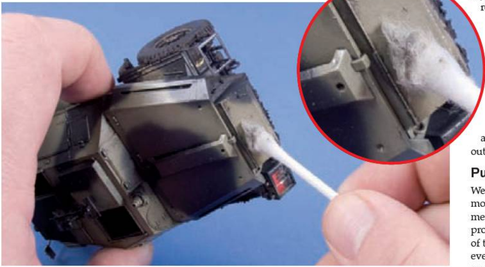


I thought it easiest to paint the Blue Black part of the camouflage first, as this would mean less work when it came to shading the Light Mud and white counter shading.



The Light Mud went on easily as the Blue Black acted as a 'pre-shade' and made the application that much quicker. I do not use masks as I am not all that crazy about the look of hard edged camouflage regardless of whether or not it would be more accurate.

The entire model received a few liberal coats of Acrylic Varnish at this point, and while it looks all shiny and new, I hate it!



A wash of quick-drying oil paints is the first weathering application, and after leaving this for a few hours to set, the excess is removed using cotton buds. I am using the cheapo brand here, and will not do so again as they fall apart in seconds!

Chips were applied using Payne's Grey on this model, and the theory of 'less is more' was adhered to, with pleasing results. Keeping each chip as small as possible is the key to making them look right.

While on the topic of the instructions I realized whilst making the POW cans that they are seriously lacking. As I've mentioned already, the POW cans themselves are poorly detailed, however, there are etched parts on the fret to improve them immensely. It would seem that Bronco had the forethought of making the model build-able for both the detailer and the 'box jockey', but failed to make any mention of that fact! Luckily I noticed the parts when making a close examination of the etched fret, after realizing there was a lot more on it than was called for in the instructions, and thus was able to modify the POW cans before it was too late.

When it comes to the addition of the roof to the hull the engineering is slightly less than perfect, and some work is required to get the fit perfect. It could be the result of less than spectacular modelling skills on the part of myself, but a small 'shim' of micro strip was required on the front right-hand side to fill a small gap that appeared.

With the basic hull assembly completed the ancillary details can be added to the exterior although personally they will be added after the camouflage application, which is what I had been looking forward to the most thus far in the build. For this project White Ensign Colourcoats enamels were chosen as per usual for me, as they offer good colour reproduction and out of the pot accuracy.

Pushing the boat out

Weathering begins with the paintjob on my models, and this will be no exception. My method of progressive shading starts the process, by bleaching out areas in preparation of the final appearance. It begins with an even coat of the base colour, followed by an application of a darkened mixture using black to the recesses and edges of the model's surface, which is subsequently followed with an application of a lightened coat concentrating on areas that would become 'bleached out'. While the process at this stage

may look exaggerated and well over the top, this will all be restored with a final 'blending' coat, the entire process being repeated with every camouflage colour. Once this has sufficiently dried the entire model will be given a thorough coat of acrylic gloss varnish, which will protect the paint job from the rigours of the weathering process.

The coat of varnish will act as a barrier between the oil paint wash and the enamel

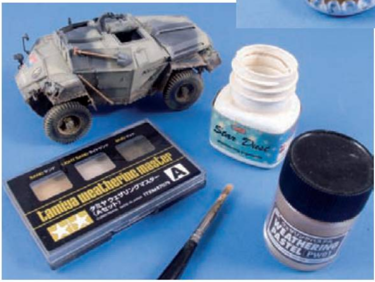
Star Dust
weathering pigments

Star Dust
weathering pigments

ABOVE: My first attempt at using thinners to transfer the pigment to the model, and while I wasn't entirely pleased with the results, I can see the logic behind it, and will try it again.

RIGHT: The thinner dulls the appearance of the pigment, so it will take some time to get an idea of how they will look after it dries during the application.

BELOW: The variety of pigments that went into this model; each has its good points, though Stardust seemed the most versatile of the lot.



WEATHERING PASTEL

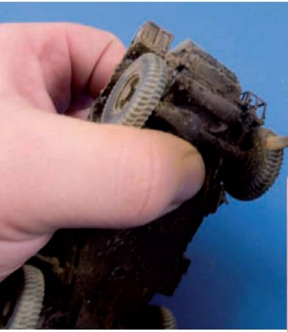
I found the Gunze pigments effective when it came to the bodywork and their colours really added to the spectrum of shades I was trying to portray.

Stardust is also effective on the bodywork, and tends to stay where you want it to, while not being too permanent that excess cannot be removed.

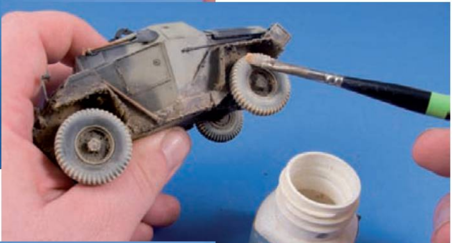
Tamiya proved to be a failure when it came to getting inside the treads of the tyres, but proved itself to be useful on the bodywork. It is, however, much more difficult to remove any excess once it is on, and should, therefore, be used with care in my opinion.

paint as they are both solvent based and unprotected it would eat into the paint finish thus destroying it.

The wash consists of a mixture of Winsor & Newton's Raw Umber and Payne's Grey, the former consisting of 85% of the mixture, the latter comprising the remaining the remaining 15%. This is subsequently mixed with high quality white spirit at a ratio of about 80% thinner to 20% oil paints. Applied locally, the wash concentrates on bringing up

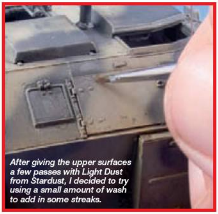


ABOVE: Tamiya pigments simply do not want to settle in the treads.

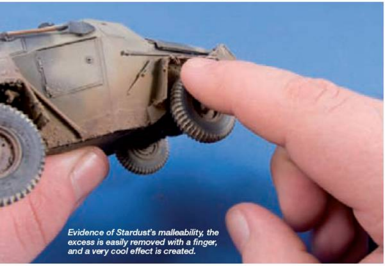


RIGHT: Stardust was much more willing to co-operate when it came to the treads and a very liberal amount was applied.

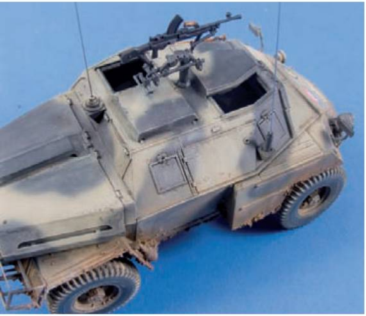
ABOVE: After finding out that the Tamiya pigments were nearly impossible to shift once on, I needed to spray some earth colours over the top to tone things down a bit.

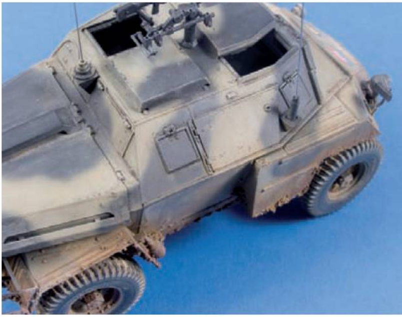


After giving the upper surfaces a few passes with Light Dust from Stardust, I decided to try using a small amount of wash to add in some streaks.



Evidence of Stardust's malleability, the excess is easily removed with a finger, and a very cool effect is created.





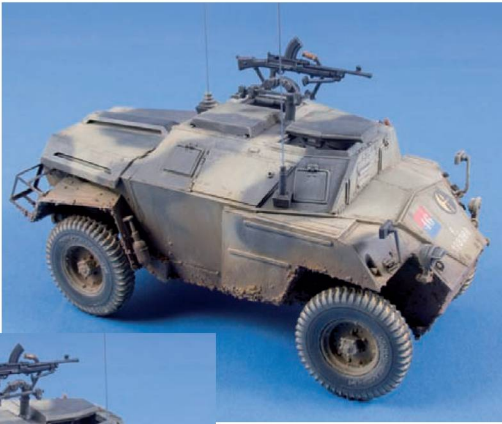
ABOVE LEFT: They may look a little sloppy and somewhat shocking when wet, but as the next image will show, patience will win the day. ABOVE RIGHT: A small amount of 'massaging' with the tip of the finger, and the area is vastly improved in appearance.

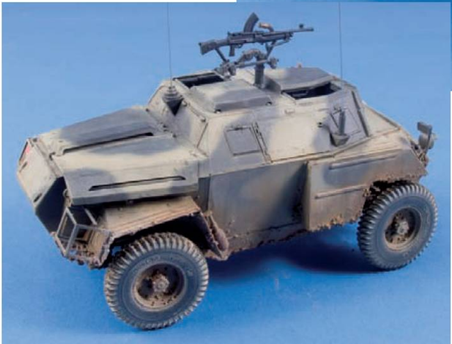
details and recreating the grimy build up that accumulates in recesses. Once the wash has reached a state of semi dryness, the excess is wiped away using cotton buds, and at this point the model is ready for the treatment of weathering pigments.

I tend to stick with CMK's Stardust as I find it possesses a perfect combination of adhesive characteristics and malleability. I have experimented recently with the method of applying the pigments and on this model I thought I would try out a method detailed by Mig Jimenez in a recent issue of *Model Military International* in which he describes using thinners to disperse the pigment over the surface of the model. This turned out to be moderately successful for me, and just goes to prove that there are many ways with which a task can be done, and some suit some modellers more than others.

RIGHT: This side of the vehicle is now complete, and all of the pigments played their role in making what I hope is a convincing rendition of a well-worn and weathered vehicle.

BELOW: All of the aspects of weathering from the wash to pigments, and finally the streaks are coming together nicely and creating a look I am very pleased with.





I pushed the boat out a bit with this model and started using some pigments other than CMK and found that each brand has its own particular points that it excels. For instance, I found that Tamiya's pigments were better at bodywork, but difficult to use on the wheels, which is where CMK's Stardust really excelled. I will make an effort to use MIG pigments on my next model, and will try to pick some up, as after reading the article by Mig to which I referred earlier, they look pretty good.

After playing around with the pigments application for a couple of days, until I felt I had it looking how I wanted them to, the matt varnish was applied to the model, and it was subsequently photographed.

Don't trust the instructions

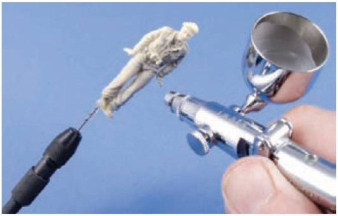
All in all I would rate this model pretty highly. It scores very highly for the fact that it is a long overdue reproduction of an important British armoured car in injection moulded plastic format, and for the price it is excellent value for money. It does have its minor drawbacks, and personally I think the instructions leave a lot to be desired. Not to make any mention whatsoever of the photo-etched parts included to improve the exterior baffles me, and had I carried on simply by following the instructions I would not have realized they were there until it was possibly too late. Considering the problems with this kit are very minor and easily rectified I would recommend it to anyone with an interest in British armoured cars, Allied armour, or Second World War subjects in general. It may be a bit complex at times, but I cannot deny the fact that I enjoyed the build, even if it did take me a while to get there in the end.

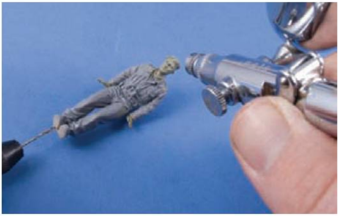
Helping hands

Once again I need to make a grateful acknowledgement here to Peter Brown and Dick Taylor, who both came through with some very helpful information and research which proved invaluable to the completion of the model, and I dare say that without Peter and Dick's help my models would be far worse than some would attest they are! Dick's article on the history of the Humber Scout follows.

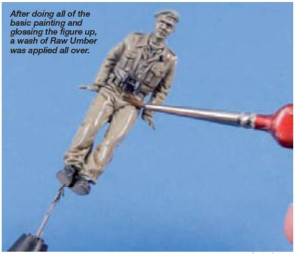
Where to get it

ColourCoats Enamels, White Ensign Models,
South Farm, Snitton, Ludlow SY8 3EZ.
www.whiteensignmodels.com
wem@onetel.com

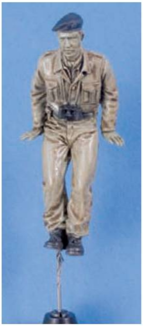




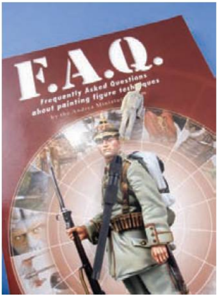
ABOVE LEFT: First thing to do is clean the figure and then prime it. ABOVE RIGHT: I like an Ochre or deep yellow as a base for flesh, and this is a carry over from some techniques I picked up from reading Mark Bannerman's figure painting articles on the Net.



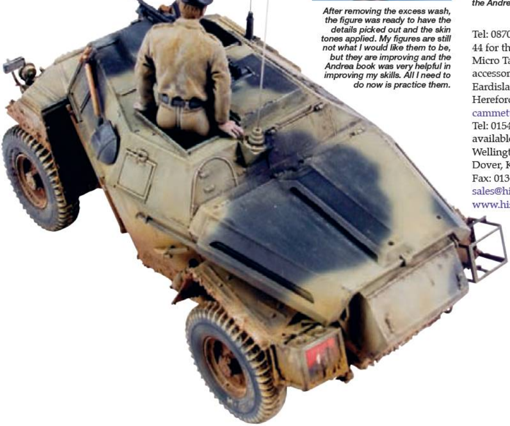
After doing all of the basic painting and glossing the figure up, a wash of Raw Umber was applied all over.



After removing the excess wash, the figure was ready to have the details picked out and the skin tones applied. My figures are still not what I would like them to be, but they are improving and the Andrea book was very helpful in improving my skills. All I need to do now is practice them.



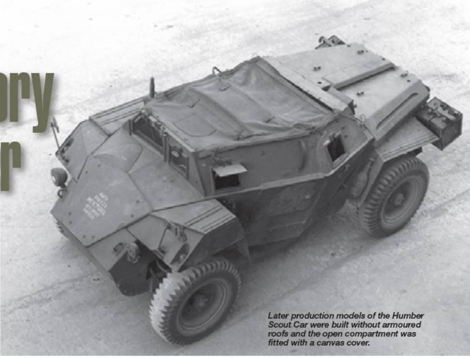
My figures are well known for being pretty shocking and I desperately need to work on them! I figured that the Andrea's FAQ book could be of some help.



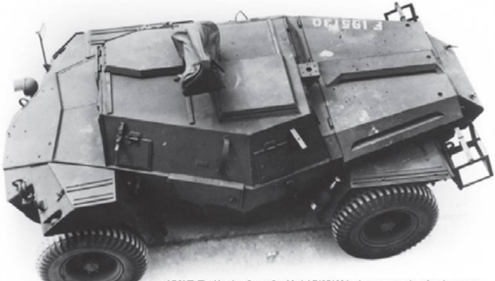
Tel: 0870 220 1888 (International callers: dial + 44 for the UK and miss off the first zero) Micro Tape, Rivet making tool, tools and accessories from Cammett Ltd., Adlen House, Eardisland, Leominster Herefordshire HR6 9BD www.cammett.co.uk cammettco@btinternet.com Tel: 01544 388514. Andrea's FAQ book is available in the UK from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528. sales@historex-agents.co.uk www.historexagents.com ■

A Short History of the Humber Scout Car

Dick Taylor offers some background info for builders of Bronco's kit

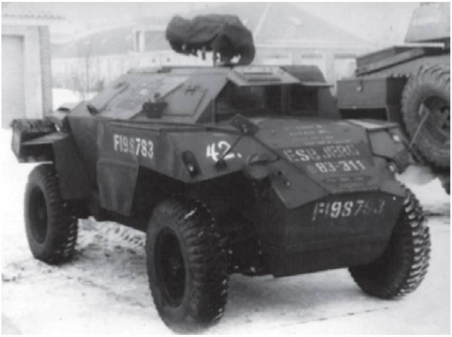


Later production models of the Humber Scout Car were built without armoured roofs and the open compartment was fitted with a canvas cover.



ABOVE: The Humber Scout Car Mark I F195130 had an armoured roof and a remote controlled light machine gun on a PLM Mark I mounting, here covered up.

BELOW: Humber Scout Car Mark II F198783 in Danish Army service in 1946.



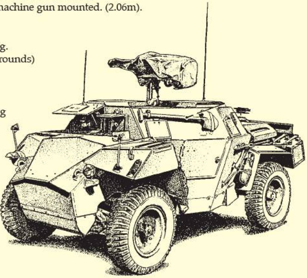
The term 'Scout Car' was a peculiarly British designation, introduced in early 1939. The phrase can be misleading, as for many people the word 'scout' has associations with reconnaissance; this was never the intention. The description encompassed a vehicle that had the following characteristics: it was to be small and inconspicuous, with good performance both on-road and cross-country, and armed with a light machine gun for self-protection only. It was not intended for reconnaissance purposes (Armoured Cars and Light Reconnaissance Cars were meant for this role), but rather for liaison duties and scouting – a term, which excluded combat reconnaissance, but included locating harbours and checking routes.

The classic example of a British Scout Car was of course the Daimler Dingo, of which nearly 6,700 were built during the Second World War, and the Canadian Ford Lynx, generally similar to the Dingo, but slightly higher, with over 3,200 being produced. However, there were never sufficient Scout Cars to go around, and in September 1942 the Rootes Motor Vehicle Group was tasked to design and develop a Scout Car. Why they were not simply asked to produce the Dingo is not clear, other than it may be that there was an aspiration to produce an improved vehicle, or possibly because there was a perceived need for a bigger Scout Car, with the ability to take a third crewman.

The prototype Humber Scout Car was delivered in the same year, bearing the registration F195100. The vehicle featured an asymmetric all-welded hull, which also provided the structural rigidity required to act as the chassis. The intention was initially for the suspension to use coil springs, but these were not successful and production vehicles used independent semi-elliptical springs with a rear axle. The driver selected all-wheel or rear wheel drive; the latter being used when on roads in order to reduce tyre wear. Run-flat tyres allowed up to 50 miles of running on a flat; a spare wheel was not carried on wartime production cars.

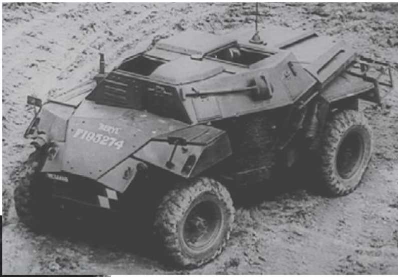
Technical Description

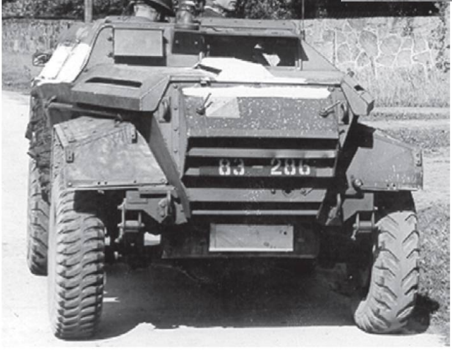
Nomenclature:	Car Scout Humber Mark I or Mark II.
Crew:	Two, Commander and Driver. (One extra could be carried in an emergency).
Dimensions:	12ft 7in Long x 6ft 2in Wide x 5ft 1½in High (3.84m x 1.88m x 1.56m). The height was increased to 6ft 9in with a light machine gun mounted. (2.06m).
Combat Weight:	3 tons 6 cwt. (Mark II 3 tons 10 cwt).
Bridge Classification:	4. (Although 5 was commonly used).
Armament:	.303in Bren Light Machine Gun in PLM mounting.
Ammunition Stowage:	.303in Bren – 33 x 30-round Box Magazines (990 rounds) or 10 drums (1,000 rounds).
Armour:	Front 6-14mm; Sides 8-14mm; Rear 12mm; Roof 4mm; Floor 4mm.
Engine:	Humber SV, 4085.7cc In-line 6-cylinder producing 87 bhp @ 3,300 rpm.
Power/Weight Ratio:	26.4 bhp/ton (Mark II 24.8 bhp/ton).
Fuel Capacity:	19½ gallons petrol, (inc. two gallons reserve).
Engine Oil Capacity:	1½ gallons.
Road Range:	220 miles.
Tyres:	9.25 x 16in.
Top Road Speed:	60 mph. (Mark II 48 mph).
Top Cross Country Speed:	22 mph.
Vertical Step:	3 feet.
Trench:	2ft 6in (with channels).
Turning Circle:	38ft (Mark II 35ft).
Communications:	WT Set No.19 Mark III.



The engine chosen was an off-the-shelf Humber six-cylinder SV 4085.7cc petrol unit, developing 87 bhp at 3300 rpm. This used a Solex carburettor and was connected to the four-speed and reverse gearbox via a Borg and Beck 11-inch, dry-plate clutch and the so-called 'Metalastik' coupling. The engine was situated behind the crew compartment, separated by a bulkhead and this arrangement allowed better visibility than a front-mounted unit. The radiator was at the rear, with air being drawn through angled louvres at the rear, and an exhaust box mounted behind the rear axle under the engine compartment. The floor of the engine compartment was made of mild-steel, not armour plate! Somewhat fragile sheet metal mudguards were mounted all round, with some stowage bins and racks provided.

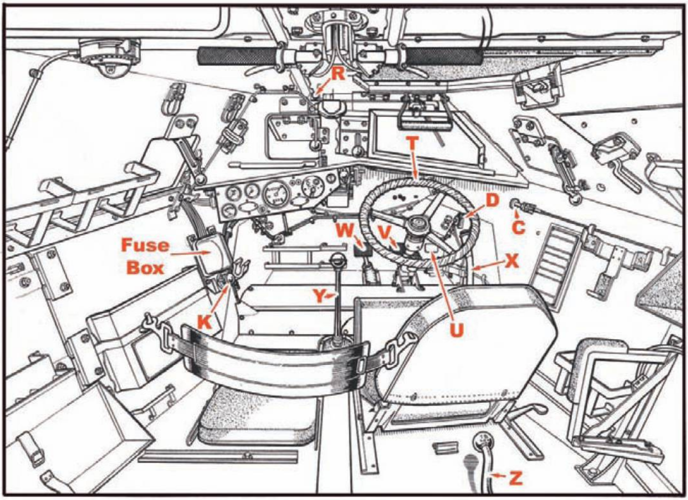
Danish Garde Hussar eagle badge. BELOW: The Danish Garde Hussar Regiment's badge.





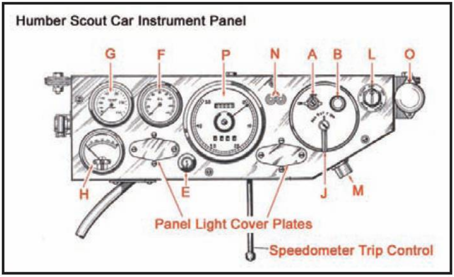
ABOVE: Humber Scout Car Mark I F195274 BERYL at Lulworth. LEFT: Good rear view of a Humber Scout Car of the post Second World War Danish Army with white convoy markings.

The driver sat at the front right of the crew compartment, with a small seat to his left to be used by a third crewman, although the workshop manual did note that this was 'for emergency use only'. The commander occupied the rear part of the compartment, his seat being adjustable to allow him to operate with his head out. Running through the centre floor was a green-painted transmission tunnel. Unlike most marks of the Dingo, the crew compartment had a 4mm armoured roof, with sliding hatches for both crewmen, the driver's sliding on rails to the left to open, the commander's to the right. A single WT No 19 Radio Set was



A. Ignition Switch. **B**. Ignition Warning Light. **C**. Starter Carburettor Control. **D**. Hand Throttle Control. **E**. Starter Switch. **F**. Oil Pressure Gauge. **G**. Temperature Gauge. **H**. Ammeter. **J**. Lights Switch. **K**. Convoy Light Switch. **L**. Panel Light Switch. **M**. Compass Light Switch. **N**. Inspection Lamp Sockets. **O**. Horn Switch. **P**. Speedometer. **Q**. Battery Master Switch. **R**. Windscreen Wiper Switch. **S**. Petrol Tap. **T**. Steering Wheel. **U**. Accelerator Pedal. **V**. Brake Pedal. **W**. Clutch Pedal. **X**. Hand Brake. **Y**. Gear Change Lever. **Z**. Transfer Box Lever.

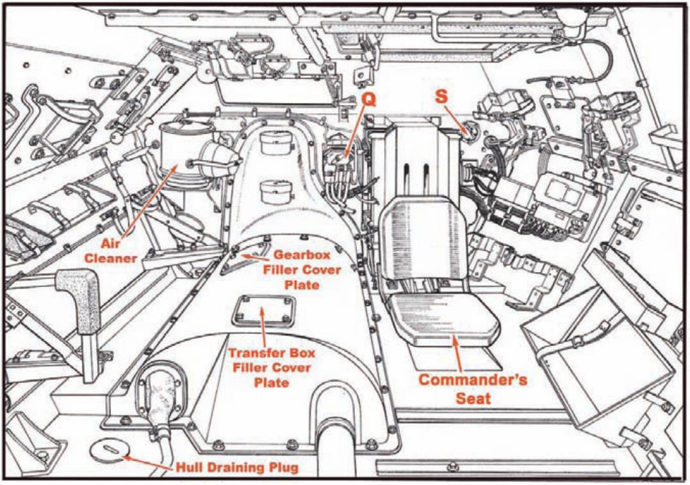
provided, and was mounted along the right side of the compartment; despite this, many vehicles were equipped with two antenna bases, so a second set, probably the No 38, may have sometimes been fitted as well. A .303 Bren Light Machine Gun was the standard defensive armament, used with the very complicated remote-controlled PLM* mounting – whereas a simpler pintle mount would probably have been preferred by many. The 100-round 'high speed' drum shaped magazines provided for Bren gun, allowed for longer periods of firing from under armour before reloading, a task that exposed the commander. The PLM Mark I mounting could also be used with the gas operated .303in Vickers Gas Operated Gun or Vickers Class 'K', that also used a 100 round drum-shaped magazine. Occasionally twin Bren or Vickers GO machine guns were fitted to PLM mountings. *(*PLM = Parrish Lulworth Motley. Ed.)*

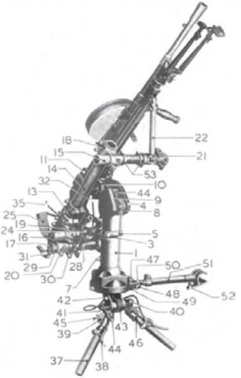

Humber Scout Car Instrument Panel

There were two marks of Humber Scout Car; the original design or Mark I, and later the Mark II which was the more prolific type with production switching to it mid-way through the initial production run. There were minor internal differences, and the turning circle was reduced, but the overall weight was increased. Both marks had six armoured visors, two on each side and two at the front, whilst early production Mark Is also featured a seventh visor (for reversing) at the rear of the crew compartment, but this was subsequently deleted.

The driver's seat on the Dingo was mounted at an angle to allow him to reverse the vehicle at speed using the rear visor; as the driver's seat in the HSC was not angled, it is probable that the rear visor was unable to be used in this way. All the visors were direct vision and periscopes were not used.

At some point, the armoured roof was dispensed with, and a full-length canvas cover provided. Documentation in the Tank Museum reference library indicates that this was done because of the threat from mines, the suspicion being that crewmen tended to be killed when a mine was detonated due to the blast being contained, whereas in an open-topped vehicle they were more likely to survive their injuries as they would often be blown clear!


Q
S
Air Cleaner
Gearbox Filler Cover Plate
Transfer Box Filler Cover Plate
Commander's Seat
Hull Draining Plug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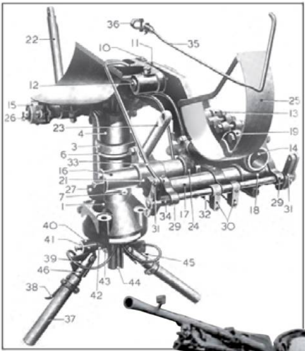
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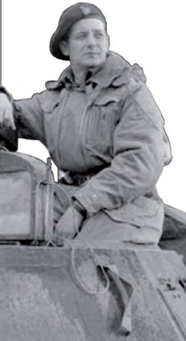
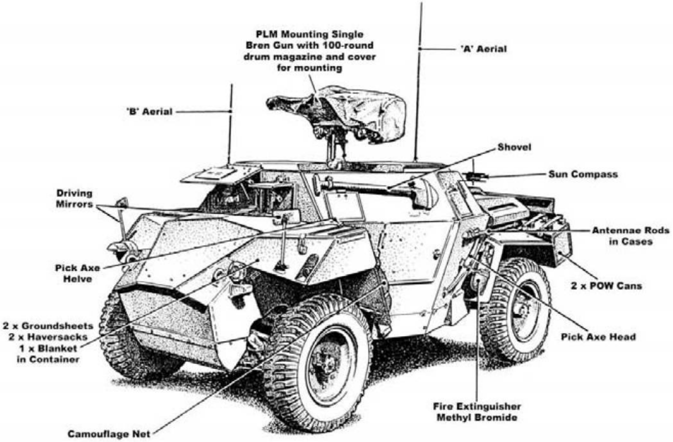
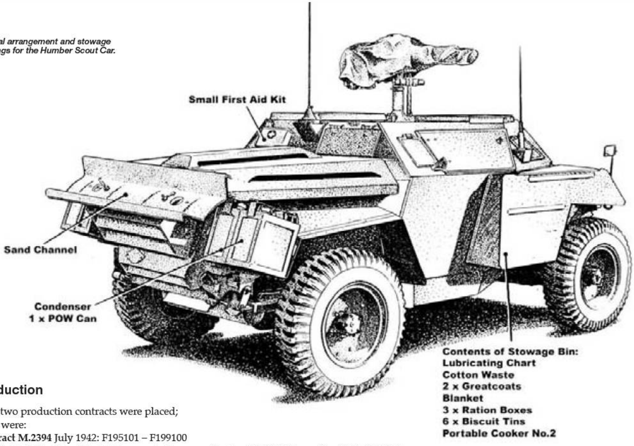
LEFT: Handbook photos for 'Mounting AA PLM Bren MG Mark I' (The vehicle handbook stated: When the gun is not in use it is essential, in order to avoid interference with radio reception, that the cradle is locked with the machine gun in a horizontal position.)

BELOW: Major David V. Currie, V.C., of the South Alberta Regiment in a Humber Mark I Scout Car, Halte, Netherlands, 12th November 1944. Note the armoured winscreen and the PLM remote mounting with a single Bren Light Machine Gun. Photo: Frank L. Duberville/ Canada. Dept. of National Defence/Library and Archives Canada/PA-140875.

1. Main pillar. **3.** Pillar sleeve of handle bar unit. **4.** Bearing bracket. **5.** Bearing bracket clamp. **6.** Thrust washer. **7.** Tecalemit lubricator. **8.** Actuating segment. **9.** Driver segment. **10.** Idler gear. **11.** Driven segment. **12.** Spindle. **13.** Clamp. **14.** Main tube. **15.** Front cross tube. **16.** Rear cross bar. **17.** Carrier bar. **18, 19 & 20.** Cross tube clamps. **21.** Clamp. **22.** Front anchorage lug. **23.** Rear anchorage lug. **24.** Cross bar clamp. **25.** Bren 100 round spare drum bracket. **26.** Front sight. **27.** Rear sight. **28.** Plate bearing. **29.** Pivot clips. **30.** Actuating levers. **31.** Firing levers. **32.** Firing cables. **33.** Trigger actuating rod. **34.** Tensioned helical twist spring. **35.** Cocking rod. **36.** Cocking lever clip. **37.** Handles. **38.** Triggers. **39.** Quadrant. **40.** Sleeve. **41.** Spindle. **42.** Bracket. **43.** Actuating segment. **44.** Actuating pillar. **45.** Quadrant notches. **46.** Fork pin. **47.** Ferrule. **48.** Bolt. **49.** Lugs. **50.** Support. **51.** Pillar tube. **52.** Loaded catch. **53.** Aligning collars.




PLM Mounting Single Bren Gun with 100-round drum magazine and cover for mounting
'A' Aerial
'B' Aerial
Shovel
Sun Compass
Driving Mirrors
Antennae Rods in Cases
Pick Axe Helve
2 x POW Cans
2 x Groundsheets 2 x Haversacks 1 x Blanket in Container
Pick Axe Head
Fire Extinguisher Methyl Bromide
Camouflage Net


Small First Aid Kit
Sand Channel
Condenser 1 x POW Can
Contents of Stowage Bin: Lubricating Chart Cotton Waste 2 x Greatcoats Blanket 3 x Ration Boxes 6 x Biscuit Tins Portable Cooker No.2

General arrangement and stowage drawings for the Humber Scout Car.

Production

Only two production contracts were placed; these were:

Contract M.2394 July 1942: F195101 – F199100
The first 1,698 built as Mark I, the remainder (2,302) as Mark II. Note that the dating of this contract places it in advance of the date given in the WO history for the order for design work to commence. This does not mean that the War Office committed itself to a vehicle ordered off the drawing board, but simply reflects the normal practice of allocating ranges of registration marks.

Contract M.8128 December 1944: F255311 – F256260. Only 298 of the 950 ordered were actually built before the contract was cancelled, so the last number issued should (theoretically) have been F255608.

During 1943 1,257 Mark I were produced, with a further 2,775 Mark I and Mark II during 1944. The final run of 266 Mark II was produced in 1945. Therefore, 4,298 vehicles were actually produced; 1,698 Mark I and 2,260 Mark II, with (again theoretical) registrations as follows:
Prototype: F195100.
Mark I: F195101 – F196798.
Mark II: F196799 – F199100
& F255311 - F255608.

Humber Scout Car Names

Listed below are a selection of Humber Scout Car names and units; less is known about the naming of such vehicles, as unit histories (where they did bother to note vehicle names) tended to record tank names only.

Name	Unit	Squadron	Remarks
BEAUFORT	6th Guards Tank Brigade	HQ	Brigade Major
BEDALE	6th Guards Tank Brigade	HQ	QMG
BELVOIR	6th Guards Tank Brigade	HQ	G Pool Vehicle
BERKELEY	6th Guards Tank Brigade	HQ	Brigade Commander
BERYL	AFV D&M School	Bovington F195274	
BICESTER	6th Guards Tank Brigade	HQ	Q Pool Vehicle
BITTER SWEET	1 Grenadier Guards	CO	
BLANKNEY	6th Guards Tank Brigade	HQ	
BRAMHAM	6th Guards Tank Brigade	HQ	LO
BRECON	6th Guards Tank Brigade	HQ	BEME
BROCKLESBURY	6th Guards Tank Brigade	HQ	LO
BUCCLEUGH	6th Guards Tank Brigade	HQ	LO
EAGLET	4 Coldstream Guards	HQ	
GULL	4 Coldstream Guards	HQ	
HURSTWOOD	8 Kings Royal Irish Hussars	RECCE TP	Berlin 1945
JACK IN THE BOX II	1 Coldstream Guards	RHQ	Technical Adjutant
JINX	7 RTR	RHQ	CO
JUNIOR	7 RTR	RHQ	
LINNET	4 Coldstream Guards	RHQ	LO
OWLET	4 Coldstream Guards	RHQ	IO
PIDGEON	4 Coldstream Guards	RHQ	RSO
PORCUPINE	16th/5th Lancers		
STORK	141 Regt RAC	NWE	

Service History

The Humber Scout Car entered service in 1943, probably too late to see service in the Tunisian campaign, but was then widely used in Italy and Northwest Europe. As it was a Scout Car, it was used by many different units, including the Royal Armoured Corps, Armoured Guards battalions, as well as by the Royal Engineers, Royal Artillery, Reconnaissance Corps, and at the various Formation Headquarters. In some cases it seems that units 'tweaked' the establishment to put the larger Humbers into the HQs, with their Dingos being used at Troop level. Users included liaison officers, intelligence officers, signals officers, technical adjutants, and commanding officers as their 'run-around' when not mounted in their tank. It was frequently used in Formation HQs as an un-allocated 'pool' vehicle. Britain's allies, including the Canadians and Poles, also used it.

As already noted production ceased in 1945, as the war in Europe ended. A decision had been made to continue to use the smaller but in many ways more capable Dingo as the Scout Car for the post-war army, and thus most of the Humber Scout Cars were scrapped or sold off. They did continue to serve in Malaya until the early 1950s, being used by Brigade HQs and in Armoured Car regiments, some converted to mount twin machine guns with a spotlight between, for anti-ambush purposes.

The Humber Scout Car was used by the French, Belgian, Dutch and Danish armies, the French apparently using them in Indo-China in the war with the Viet Minh. Today, a few surviving examples can be found in museums, and a small number of beautifully restored examples survive to grace military vehicle rallies.

Bovington's Humber Scout Car

A preserved Humber Scout Car Mark I is on display at the Bovington Tank Museum, and as all museum examples, it must be viewed with a critical eye. The vehicle is not complete, although it is in good condition. The headlamps and horn are missing, and the interior can best be described as basic. The sheet-metal mudguards and stowage bins are very creased, demonstrating how flimsy they were. It is painted in overall SCC No 15 Olive Drab with a silver interior, and represents the vehicle of the Technical Adjutant, RHQ 1st (Armoured) Battalion Coldstream Guards, Guards Armoured Division in North-West Europe 1944-45.

Conclusion

The Humber Scout car never achieved quite the same reputation that the Dingo did, and there are a number of reasons for this. Firstly, it was not produced until 1943, by which time many thousands of Dingos were in service. It was not a particularly handsome vehicle, and had an inferior cross-country performance to the Dingo. The PLM mounting was an unnecessary complication for a vehicle that was not meant to be used in offensive roles. The decision to select the Dingo as the post-war Scout Car meant that its effective service career lasted for only two and a half years, discounting its later small-scale Far East service. However, with nearly 4,300 examples being produced in both Marks, it certainly gave good service during the latter period of the war, and if for no other reason that that of sheer numbers has reserved its place in British military vehicle history.

Acknowledgements

Thanks to David Fletcher, Kevin Tucker and Stuart Wheeler, and particularly to Henrik Teller for photographs and information on the Danish use of the HSC. www.armyvehicles.dk ■

Official Diagrams (From Bovington Tank Museum Plans' Pack)

TM Reference	Description
STOWAGE SKETCH MK I	TD16029
	¾ Front LHS
	¾ Rear RHS
	Hull Interior Front
	Hull Interior Rear
STOWAGE SKETCH MK II TD36661	¾ Front LHS
	¾ Rear RHS
	Hull Interior Front
	Hull Interior Rear
WORKSHOP MANUAL PAGE 13	Instrument Panel
WORKSHOP MANUAL PAGE 20	Engine Access
WORKSHOP MANUAL PAGE 21	Engine LHS
WORKSHOP MANUAL PAGE 22	Engine RHS
WORKSHOP MANUAL PAGE 32	Front Transmission Front
WORKSHOP MANUAL PAGE 33	Front Transmission Rear

The Irish Model Soldier

News of the forthcoming Anniversary Show illustrated with photos from previous events

1

It is now almost 50 years since a Ian Greene, Joseph Gubbins, Ian Hudson and F. Glenn Thompson, a group of like-minded young men, got together in Ian Greene's house on Dublin's Sydenham Road, to discuss their mutual interest in figure modelling and wargaming.

From these meetings sprang the idea of forming a model society and, spurred on by Seamus O.D. Wade, the Irish Model Soldier Society was formed. The first official meetings of the Society took place in Buswell's Hotel in Dublin.

The Society will celebrate its 50th Anniversary this year and to commemorate this remarkable achievement planning is well under way in preparation for what is planned to be one of its best Annual Shows ever. This will be held in the Coach House in Dublin Castle, right in the very heart of the city and within walking distance of many hotels shopping areas restaurants and pubs.

The show is scheduled to take place on the weekend commencing Friday the 16th of May 2008, which will be primarily for trader set up and pre-registration of model entries. Competition entries will continue on Saturday the 17th up till 3.30pm when judging will commence. Prize giving will take place from 3pm on the Sunday.

During the course of the two days there will be demonstrations by Hardy Tempest on his unique painting techniques and seminars by Hilary Doyle who will be presenting a power-point presentation on his German Armour research. The Military Vehicle Society of Ireland will also be in attendance outside the venue.

The Coach house is divided into two halls; one, which will be used for the competition, and the other for traders and demonstrations. With the nearby Chester Beatty Library and restaurant as well as the Castle itself there will be plenty to see and do.

Full details of competition classes are available on the web at www.imss.moonfruit.com/ or by contacting Mr John Schley Tel: 00353 868281036 or via e mail to trooper164@eircom.net ■

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1. 'Irish Guards' won a Silver medal for Phillip Donnelly.

2. Irish Model Soldier Society's Committee - from left to right; Shane McElhatten President, Paul Marshal Secretary, P.J. Gregan and John Schley Treasurer.

3. 'Punjab Cavalry' – a Gold medal for Dave Maddox's Punjab officer in Afghan coat and Turban in the IMSS's Norman Judd Trophy.

4. Ken Hayes' Bren Carrier and Stuart Light Tank of the 38th Irish Brigade won a Silver medal.

5. 'By the Sword Divided' - a bust of a Parliamentary trooper won a Gold medal, for Dave Maddox.

6. 'Across a Nightingale Floor', a Bronze medal for Dave Maddox's samurai.

7. 'Left a bit right a bit', Ken Hayes' scratch built Lancia armoured car won a Gold medal.

8. A scratch built Thompson Ford Armoured Car of 35th Battalion ONUC - a Gold medal and Best of Show for Aaron Smith.

9. 'Walk the line', a Gold medal for David Coyne's diorama.

10. This 'Croatian BTS3 ARV, Operation Storm' got a Gold medal for its builder Zachary Sex.

11. 'Photo Opportunity' – a Bronze for, David Coyne's 88mm FlaK and crew.

12. 'Roman Officer', a Bronze medal for Roberto Spaolonzi's treatment of Young Miniatures' kit – the representation of leather is remarkable!

13. A neat Silver medal winning M3 Scout Car by David Coyne.

14. Stephen Jamison's 'The Lacrosse Players' involved three converted Indian figures and won a Silver medal.

15. "We do 'other things' too!" The 'Anna H' tugboat built by Charles Bryant.

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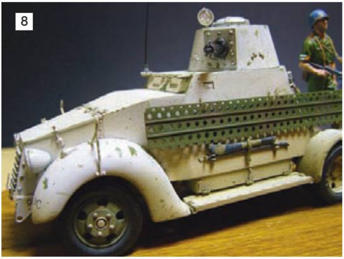
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Society is 50 This Year

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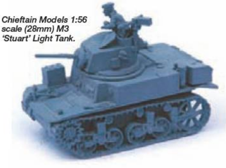
M26 Dragon Wagon photographed at Beltring War and Peace Show.



Chieftain Models 1:56 scale (28mm) M3 'Stuart' Light Tank.

Small Scale Scene

● **E-mail:** robin@rbuckland.freeserve.co.uk ● **Website:** www. rbuckland.freeserve.co.uk

A monthly column for military vehicle modellers compiled by ROBIN BUCKLAND

With the way our hobby has been developing over the last few years, and the appearance of models that were once no more than a thought in a wish list which we never expected to see … but for the resin manufacturers, now being pushed as injection moulded kits are appearing of subjects that have been only in the realm of the specialist resin firms for years, there is the challenge of what to do next.

Now I haven't seen the model 'in the flesh' so far, just a photo, but Milicast, in conjunction with 'Modelworks' by Danny Taylor, are following up the LCI (L) and other landing craft he has made with a 1:76 scale re-creation of Pegasus Bridge! By the time you read this it may be available, I am not sure, but what diorama potential there is for this one, though of course you will need the space to keep it. With the close proximity to the bridge to where the gliders really landed, then you have an opportunity to re-create a very real piece of history. The original Pegasus Bridge was replaced some years ago, but the original sits close by, in the grounds of the Pegasus Memorial museum. You can walk on the bridge if you visit. It means of course that there is a perfect reference point for the model. Anyway, it is 'work in progress' for Milicast at the moment, and we await the end result.

I suspect this will make Milicast one of the best single sources for D-Day related equipment. Here you will find the bridge of course, plus the LCI(L), along with all the smaller type of Landing Craft (Accurate Armour do the LCT), plus various marks of Sherman DD; the wading trunking sets for a variety of Allied AFVs, a wading carrier and of course the Churchill AVRE Fascine carrier. There's plenty in the list to check out.

Staying with Milicast for a moment, but moving on in time slightly, the British Comet tank was used in the later stages of the war in Europe. It is the Comet that is the subject of a recent release from Milicast, in their Battlefield range. So simple enough to assemble, as the hull is cast in one piece, you just add the hull machine gun and driver's visor, plus the two exhaust cowls at the back. Even the headlight guards are finely moulded in place, just use a sharp craft knife to remove any flash from inside these rails, but be very careful how you go, so not to damage the guards themselves, plus remove any flash from between the roadwheels. The canvas cover to the gun mantlet is nicely done, and the turret hatches can be fitted open or closed. So quick to assemble but a neat end result, and the easy-to-build Battlefield range is growing at a pace. Milicast are at 9 Rannoch Street, Battlefield, Glasgow, Scotland G44 4DT. On the Web at www.milicast.com

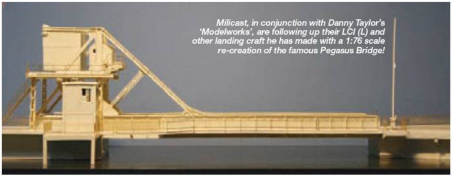
Diary of a Journey Website

Talking of the Normandy beaches, I have a small, separate Website I set up, covering some battlefield visits. I did it some months ago, but have now added the 5th and final section, to include Utah beach. If you'd like to have a look at this small site, which came out of my 'Diary of a Journey' articles, it can be found at www.smallscalescene3.mysite.orange.co.uk I hope you find it interesting.

Chieftain Models

Chieftain Models is a new range to the column, and they do wargamers models for 28mm scale gaming, in what is about 1:56 scale. As the name suggests there are a couple of modern subjects, which includes Chieftain MBT and Scimitar CVT, but the bulk of the range to date features WW2 subjects. I came across the range for the first time at the Colours show at Newbury racecourse in September. The made up and painted examples on display certainly attracted the visitors to the show. Very nicely done, with the Chieftain looking good in the complex Berlin scheme.

The WW2 subjects feature a lot of Desert War orientated equipment, including German, English, French and Italian gear. The P16 Schneider half-track looked unusual



Milicast, in conjunction with Danny Taylor's 'Modelworks', are following up their LCI (L) and other landing craft he has made with a 1:76 scale re-creation of the famous Pegasus Bridge!

RIGHT: There are buildings near the bridge that were there during Operation Dead Stick – the taking of Pegasus Bridge by British Airborne troops in the early hours of 6th June 1944 and this one is now a café/restaurant/souvenir shop. Pegasus Bridge is definitely worth a visit if you are interested in D-Day and thereafter. BELOW: The original Pegasus Bridge that once stood over the Orne Canal was replaced by a new structure and moved to the side where a Museum was built. This is the original bridge that was stormed and captured by British Airborne troops flown in by gliders that landed nearby.

PEGASUS BRIDGE

Trumpeter's 1:72 scale Russian BTR-80 Armoured Personnel Carrier.

while the Italian Lancia 3RO truck is impressive. The example I have here is one of their newer ones, the M3 Stuart. All cast in metal there is some minor clean up to do on the castings prior to assembly, but not much. All the larger parts I solder together, which is even better with the weight of metal involved with these larger metal models. There were no assembly instructions supplied, but so long as you have a few photo references to work with, nothing is too difficult to work out for yourself. Once assembled, rinse and allow it to dry to get rid of any mould release or soldering flux if you have used it then use a spray primer prior to painting. These are geared towards wargamers and are easy enough to assemble. Once painted up they look really good. Check out their Website at www.chieftainmodels.co.uk for more details.

Forces of Valor

New ready made and painted models in 1:72 from Forces of Valor are rather like the proverbial bus where two come along at once! Following the recent release of the 1:72 scale M26 Dragon Wagon from Academy, now Forces of Valor (made by Unimax Toys) have added one to their range. You don't have the task of assembling the kit, but for many people that will be fine. In one important aspect, the new Forces of Valor model scores for having the correct looking chain drives on the rear wheels of the tractor unit. I found the cab is not secured on the tractor unit, and will lift off, so you can detail the cab interior, and repaint the driver figure if you choose to (personally I will), but that depends on what you want from it. It's nicely detailed and the rear ramps are moveable and of course all the wheels rotate on the axles. For the purist modeller, there are some details you might want to improve on (like the mount for the .50cal on the cab roof, but overall this is as good as, and in the case of the drive chains, better than the Academy model. This series of 1:72 scale models from Forces of Valor is really very good indeed. Have a look out for their M26. My thanks to Forces of Valor in Hong Kong for my example.

Wargames South

News now of some more 1:144 scale releases now from Wargames South. Aimed primarily at wargamers of course, these small vehicles are also ideal for dioramas and the fact they are Allied equipment means that there is some potential opposition for the German 1:144 scale models that Dragon Models have been producing in recent years. In this case there is a Sherman Firefly, another Sherman, the M4A4, a Churchill AVRE and the solitary German subject, a little *Schwimmwagen*. All cast in metal, these are simple enough models to assemble. The castings are very clean and neat, along with the detail on them. Once assembled just add a coat of primer, and then paint to your taste. The finished models look really good.

I believe the AVRE is going to be the first of a series of the different variants of 'Funnies' as used by 79th Armoured Division. I think this would be something special to look forward to, as it would open up some interesting diorama possibilities in this small size. The Churchill consists of hull, turret, petard barrel, front machine gun and plate and the pair of track units. The Sherman follows similar lines, with hull, track units, turrets and gun barrels, plus the hull machine gun for the M4A4. The little *Schwimmwagen* is the main body (with windshield folded down and cast in place), plus five wheels (four + the spare) and the propeller unit for the back. Available from Wargames South, 1 St Giles Close, Ise Lodge, Kettering, Northants NN15 5HA.

The 1:72 scale Dragon Wagon from Forces of Valor.

Valiant Miniatures

Let's just delve into the field of small-scale figures for a moment. They have been about for a little time now, but I have now got to see the injection moulded plastic figures by a new manufacturer, Valiant Miniatures. Their first two sets are for 'British Tommies 1944/45' and 'Classic German Infantry 1944/45'. Each set contains 68 hard plastic figures, and in both cases that means you get the one sprue of figures, but four full sprues come in each box, hence four of everything, so plenty to work with. Let's get the critical bit out the way first. I measured the standing figures around 27mm tall (one and one sixteenth of an inch) that would make them all around 6ft 5in in human terms, or there about. Nicely proportioned as they are, the unit would be built like 'brick outhouses'. So they are a bit over large if you want to put them in or immediately alongside 1:72 scale vehicles. Ideally, and for any future releases, it would be good to see their stature just a bit smaller. Having got that out of the way, everything else about them is very good; in fact, they meet what many modellers have been crying out for, for years. These are nicely sculpted poses, with good proportions, well-detailed uniforms and equipment and more. More? Yes, in addition to the figures that are moulded in one piece, a few have a choice of arms and weapons, plus there are spare heads included on both the German and British sprues. These have a mix of helmets with camouflage covers, peaked caps, field caps and bare heads in the German set, and plain helmets (no netting), officers peaked caps, berets and bare heads in the case of the Tommies. With the British Tommies, the small pack is separate, so it can be fitted or left off.

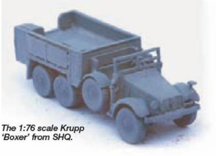
Being hard plastic means that it is much easier to convert these figures with different heads, weapons and so on, so you can increase the variety of poses and the look of any figure you wish. Heavier weapons on the sprues are the tripod mounted MG42, 81mm mortar, and *Panzerschreck* in the German set, while a Vickers HMG, a mortar, plus a choice of either Bren or PIAT operator for the British. The good thinking even goes to the use of one side of the box, as printed full colour card it can be cut out, stuck back to back to get colour both sides, providing a small section of ruined wall plus a road sign. It is a simple thought, but almost like a free gift to help you use the figures. If you are using them 'stand alone' on a wargames table or in a diorama, then you should be very happy with these. You might have an issue if you want them right up alongside or crewing your 1:76 or 1:72 scale vehicles, but otherwise I'd say that this really is a 'Valiant' effort (sorry, I couldn't resist the pun!) for a new producer, and it's obvious that they have tried to provide what many modellers have been asking for all these years. I rate it a real shame they are a bit on the large side, as otherwise they would have hit the nail on the right on the head. I know there are a couple of new sets planned, and I do hope they do get the figure size reduced a bit more, but as a starter product, well done to Valiant Miniatures and my thanks to Valiant for sending through my examples. They are in the shops now.

AAAMODELS.co.uk

A few things happened more or less together recently, which prompts me to group them together here. Firstly I came across the new 1:72 scale BTR 80 kit from Trumpeter on sale at the London MAFVA show, early in September. Maybe it is a hangover from growing up through the so-called 'Cold War', but Russian equipment was always a bit of a mystery. Now we see them on the news as part of various UN peacekeeping units, and photos are easier to find, but more on that in a moment. In simple terms I think this is a very neat little kit. Simple to assemble, the detail and overall look of the finished model is good. Some modellers will be upset that there are no open hatches, so awkward to adapt for adding crew figures, and some will not like the black vinyl tyres, but once painted and weathered, I reckon they will look fine. No doubt we will see some etched metal and/or some resin detailing sets come onto the market, but many will be happy with it as it is. I'd guess that a lot of wargamers will be happy with a kit that is easy to get together, and priced well enough to buy a few for a wargames unit. Overall, great value for money I think. I got mine at a small stand at London MAFVA, from a new Internet based dealer, www.AAAMODELS.co.uk
Tel: 01403 713735, who are also importing the Ace range of kits as well.

Zvezda

Now, an unusual item in the column, but I'd like to mention a set of 1:35 scale figures by Zvezda, (passed to me by the Editor) for a 'Vimpel' Russian anti-terrorist unit six-figure set. Four standing and two kneeling figures are all in black coveralls, flak jackets, helmets and facemasks, plus an unusual array of modern weaponry. One of the kneeling figures is holding a mirror, so he could be looking round a corner, or maybe checking the underside of a



The 1:76 scale Krupp 'Boxer' from SHQ.

vehicle. All on a single sprue, the figures look neatly done. For those who don't like the challenge of painting faces, these are almost ideal as all you can see is the area around the eyes as helmets and balaclava style masks hide the rest, and then even that is partially hidden further as clear plastic visors for the helmets are fitted in front of that.

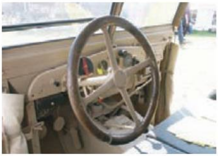
So, why these two together? There is a forum on 'Russian Photos' within www.militaryphotos.net/forums that now runs to several hundred pages (I've still only been through about half). This has hundreds of useful and interesting photos within it, including many of the BTR 80, so if you want a variety of unusual camouflage schemes, evidence for wear and weathering, or proof that the exhausts are not rusted as they are depicted in the box top picture of the Trumpeter kit, then this is well worth checking out. Look for photos of everything Russian, for Air, Land and Naval equipment plus clearly a lot of Russian members of police units. Lots of pictures showing uniform and weapon details that are excellent references for the new figure set as well. It seemed one of those coincidences in life that all three of these came along in close succession. If you like modern Russian equipment, then do check out that forum.

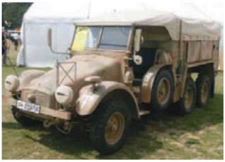
Dragon Models Ltd

There is, of course, no stopping Dragon at the moment. In 1:72 scale they keep adding to their range of both modern and WW2 subjects and amongst the most recent is the M4A2, with no less than seven different marking options, all for tanks used by the US Marines on Tarawa in 1943, and also used by both Russian and French units. With the single-piece cast transmission cover and the different style engine deck used on the M4A2, this is of course another excellent and welcome addition to the variety of Shermans from Dragon. I continue to applaud their inclusion of some plastic detail parts, which also have the option of being replaced with etched metal alternatives also supplied in the kit. Whether you use them or not is a matter of personal choice. For younger, or maybe even older modellers, whose dexterity and eyesight may not favour using the metal parts, then that's fine, you have a choice. To me this is good forethought from Dragon as it makes it suitable for all skill levels. This one is in the shops now.

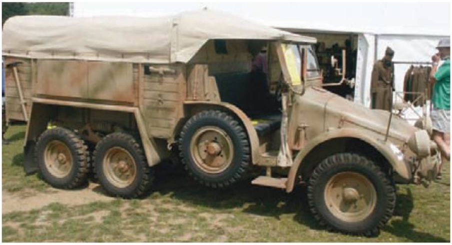
SHQ

I mentioned the move of SHQ to their new address a couple of months ago, and now news of some new vehicle kits they had on sale at the Colours Wargames show at Newbury racecourse back in September. Amongst a number of new items are a series of German trucks, the *Kfz 69* 'Boxer'. These are all metal models in 1:76 scale as usual, and feature all





An original preserved Kfz 69 Krupp Protze light truck (Boxer) from a Belgian Museum that I photographed at the War & Peace Show at Beltring. A section in Allied and Axis No.19 from Ampersand features this same vehicle.

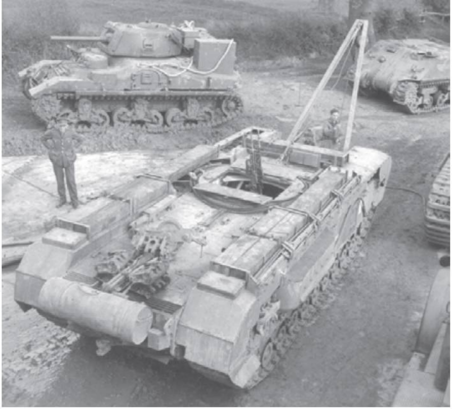


the versions you might want of this ubiquitous little truck. Used on all fronts during the Second World War, you can have the basic GS truck, the artillery tractor, with the ammo boxes and crew seats in place of the standard bodywork, an enclosed Radio Truck, or a variation on the GS, with a raised floor, for mounting the *2cm FlaK* which is available separately in the SHQ range (as are a choice of crew sets they do in uniforms appropriate for different theatres of operations). The bonnet, front mudguards and chassis are cast as a single piece, and common to all the versions. Underside detail is very basic, and the axles are simple, stout metal rods that will happily carry the weight of the finished metal model without bowing under the weight. Surface detail is nice throughout, though of course, all trucks come alive if you add some crew figures to them as well.

The castings require cleaning to remove a little flash and attention to some edges, but this is not difficult, and no more than you do with many a standard plastic kit. Assembly is then quite straightforward. Always dry-fit the parts to check fit first and, if necessary, you might need to ease one or two parts into place. On the office body version, just take care to line up the body panels carefully as you go. As most regular readers know, I prefer low melt solder for assembly of white metal kits, for all the main parts and for the strength of the bond on the finished model. It also helps to tack parts together while you check it out in assembly, and then apply the solder to the joints once you are happy with everything. Exploded assembly diagrams are provided to guide you, and these are neatly done and give you all the information you need. Overall, a good series on new truck models, SHQ are now at The Potting Shed, Flaxdrayton Farm, South Petherton, Somerset TA13 5LR. Tel: 01460 241306 newhopedesign@hotmail.com and their Website www.shqminiatures.com

Publications

Allied and Axis is a series of soft-cover books from Ampersand Publishing in the US, and they have recently published issue 19 in this series. Printed in a landscape format, each page has a full-page photo plus an informative caption, mixing historical images along with some from restored vehicles seen on display either at shows or in museum collections. Just having mentioned the SHQ *Kfz 69* 'Boxer' truck, one section in this issue is devoted to just that, with a restored example from a Belgian Museum photographed at the War & Peace Show in the UK. All pictures other than the cover are in black and white, but there is lots of detail to be had from these. Other topics this time include the M2 and M2A1 half track, perfectly timed of course for those of you doing the excellent new kits from Dragon, and a couple of excellent interior shots of the M4 mortar carrier will be popular. Then another section devoted to the *SdKfz 10* Demag half-track. Finally, a section devoted to German *Bergepanzer*, the recovery tanks. These include the *BgPz III*, the *Hetzer*, *Begepanther* and the Porsche *Bergepanzer*, based on the 'Ferdinand' chassis. Simply a very useful reference work that is clearly designed by modellers for modellers. Published by Ampersand Publishing, 235 NE 6th Avenue, Delray Beach, Florida, 33483 and the Allied & Axis series is also available in the UK via Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528. sales@historex-agents.co.uk www.historexagents.com Thanks to Pat Stansell of Ampersand for my example. ■



LEFT: A Ram ARV Mark I, complete with turret, trundles past a Churchill ARV Mark I. The Churchill's jib crane is erected with the block and tackle rigged for a lift. Note the twin Bren Light Machine Gun antiaircraft mount.

Taking the Strain

First of a two-part feature on the evolution of the Ram ARV Mark II and how to model it by Chris Johnson

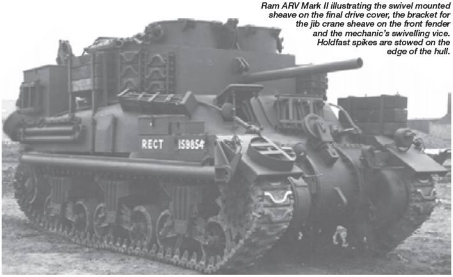
Sustaining the momentum of offensive operations involving armoured vehicles requires rapid recovery and repair of vehicle casualties, to cycle them back into service in the shortest possible time frame. Roughly 50% of all casualties sustain relatively minor damage and are repairable in a short period of time. An Armoured Recovery Vehicle (ARV), with its combination of protection, speed, and specialized equipment, promotes recovery operations close to, if not directly in the battle zone. During the Second World War, each of the warring nations developed their own system of vehicle recovery and they fielded recovery vehicles that dovetailed with their doctrine.

In British and Commonwealth doctrine, the recovery and repair of vehicle casualties was a Royal Electrical and Mechanical Engineers (REME) responsibility, when the work involved was beyond the capabilities of the user units. Towards that end, a system of four echelons was employed.

First Echelon (First Line) repairs consisted of minor replacements and adjustments at the user level. Second Echelon (Second Line) replaced assemblies of a size and complexity beyond the capabilities of the user units. Third Echelon (Third Line) took care of heavy repairs, repairs to defective assemblies, and those repairs where extra labour would be required. Fourth Echelon (Fourth Line) undertook complete overhauls and any repairs beyond the capabilities of the Third Echelon.

First Line unit workshops were known as Light Aid Detachments (LAD), Second Line were brigade workshops, Third Line were division or independent brigade workshops, and Fourth Line were army workshops.

Recovery involved the clearance of derelict vehicles from tactical routes, moving them to a collection point, and delivering them to a workshop. At the unit level, a LAD performed the actual recovery of the derelict from the battlefield and effected its movement to a collection point. If the repair was beyond the scope of the LAD's capabilities, it was the responsibility of the next level echelon to transport the derelict to its workshop, and so on up to the Fourth Line.



Ram ARV Mark II illustrating the swivel mounted sheave on the final drive cover, the bracket for the jib crane sheave on the front fender and the mechanic's swivelling vice. Holdfast spikes are stowed on the edge of the hull.

Light Aid Detachment Types

Type 'A' Armoured - GHQ Liaison Regiment, Armoured Car Regiment, Reconnaissance Regiment.

Type 'A' Non-Armoured - Headquarters Infantry Brigade, Infantry Division Anti-Tank Regiment, Survey Regiment, Corps and Army Signals Units.

Type 'B' Armoured - Armoured Division Artillery Regiment, Engineer Field Park Squadron, Armoured Division Signals, Armoured Division Motor Battalion.

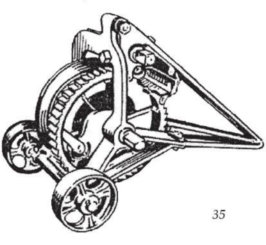
Type 'B' Non-Armoured - Headquarters Armoured Division, Field, Medium and Heavy Artillery Regiments, Field Park Companies, Infantry Division Signals, Machine Gun Battalions.

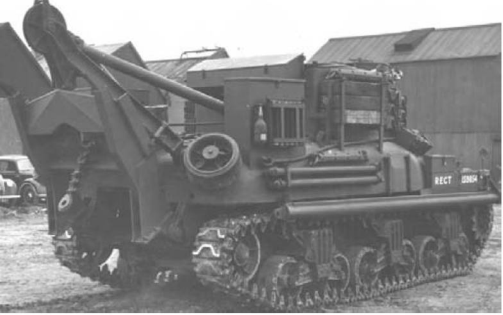
Type 'C' - Armoured Regiments, Armoured Reconnaissance Regiments, Delivery Squadrons of Armoured Delivery Regiment

Type 'D' - Self-Propelled Field Regiments, Anti-Tank Regiments

The requirement for an ARV in an Armoured (Type 'C') LAD is obvious, but for a variety of reasons, reliance was placed to a great extent on the Scammell 6x4, which was, always in short supply, a variety of Lend-

An illustration of the Trewhella Winch, which was part of the recovery equipment carried on the ARV Mark I as it didn't have a power driven winch.





The six-foot Hollebone tow bar is stowed on the right side of the hull. The swivel tow bar is mounted on the tow lugs on the lower rear hull. The brackets for locking the front and rear suspension units are visible, as are the locking pins stowed on either side of the raised ventilator casting on the hull.

Lease soft skin recovery vehicles, and the Caterpillar tractor, which while ponderously slow, was equipped with a powerful winch. AFVs continued to increase in both size and weight throughout the war and this in turn, led to a requirement for recovery vehicles of similar size, equipped with power-driven winches, which enabled the recovery of large derelicts. The War Office, however, seemed to display a curious lack of appreciation for the necessity of a fully capable ARV at the First Level throughout the Second World War and beyond, relying instead on the improvisational skills of its recovery units to get the job done.

It wasn't until April 1941 that a Director of Mechanical Engineering was appointed, with a mandate to investigate existing recovery equipment and techniques. Under the Director's parentage, the Experimental Recovery Section (ERS) was established in October 1941, with an initial complement of just two officers and 20 other ranks. ERS was initially tasked with conducting trials of the various types of recovery equipment coming on stream from British, Canadian and American sources, and it was eventually transferred to REME in 1942. By the end of the war, its mandate had grown to include the actual design of recovery vehicles and their ancillary equipment. The Hollebone drawbar, paying-on/tensioning gear for power winches, and spade anchors were several notable designs developed by this unit.

Not until 1942 did experiments to develop an ARV begin in earnest, as up until that point, both the Ministry of Supply and the War Office had been forced to give their highest priority to the design and production of fighting vehicles. It would be late 1942 before there were adequate numbers of tanks on hand to even consider converting any of them into ARVs. From that point forward though, tanks were in sufficient supply to permit the design and conversion of existing types for recovery requirements. Initially though, ERS was forced through a combination of circumstances to reach a compromise when developing their first ARV.

In the first place, British industry was strained to its absolute limits for the war effort and as mentioned previously, the design and development of an ARV equipped with a power-driven winch was forced to take a back seat to more urgent priorities. Secondly, following the conclusion of fighting in North Africa, where the recovery and repair of derelict tanks had proved wanting, the Allies were primarily engaged in offensive operations which enabled the removal of AFV casualties by soft skin recovery vehicles after the fighting had moved on. This may well have reinforced a perception in the War Office that a fully capable ARV was not of pressing concern. Lastly, and perhaps most importantly, even though tanks were becoming increasingly available for conversion into ARVs, power-driven winches were still in short supply as the lion's share of existing production was earmarked for Royal Navy requirements.

The end result was that the first British ARV design was a compromise between that which would ideally address the requirements of REME, and that could be produced immediately to equip the expanding armoured forces.

ARV Mark I

The first experiments with an ARV design began in February 1942, involving conversions based on Churchill and Covenanter tanks. These conversions would become known as the ARV Mark I. The major modification involved removing the turret and plating over the opening in the hull. Access to the interior was provided by means of double-flap doors incorporated in the cover. While the use of existing tanks in the conversion addressed protection and mobility issues, the Mark I was not equipped with a power winch and was for all intents and purposes, little more than an armoured retriever, or tug, which still fit the doctrine of the time, however, where the employment of an ARV was intended for minor repairs and moving derelicts to collection points.

The Covenanter ARV pilot model was judged wanting and work on it was abandoned in favour of converting more Churchills, examples of which were first employed in North Africa. By October 1942, pilots had also been converted from Crusader and Grant tanks, the Crusader conversion being no more successful than the Covenanter. A few Grant Mark I ARVs are believed to have been sent to Italy for assessment, but the rest were retained in the U.K. for training purposes.

Ultimately, production of ARVs to Mark I standard concentrated on Sherman, Centaur, Cromwell and Churchill tanks. The lone exception to the rule was the Canadian Ram ARV Mark I, which was developed by the Royal Canadian Ordnance Corps (RCOC) in concert with ERS. In contrast to the others, it retained its turret and mounted a fixed, external manual winch and cable drum.

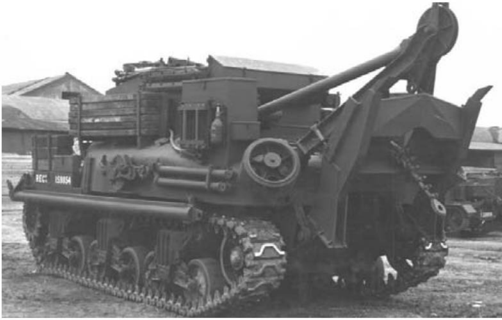
To increase the Mark I ARV's capabilities in recovery operations, it was equipped with a portable, manually operated Trewhella winch, Holdfast earth anchors, snatch blocks, scotch blocks, Hollebone drawbars, cutting and welding equipment and a dismountable, portable jib boom that employed a block and tackle. However, any recovery operation that required the use of a power-driven winch still necessitated the employment of a Caterpillar tractor, or soft skin recovery vehicle.

The ARV Mark I saw extensive service in Italy where six examples of the American M31 ARV were also employed. Sometime later, a few M32 ARVs were also taken on strength and they remained with REME Mediterranean units well into the post war years. The M31, while an interim design until the arrival of the M32, was based on the M3 Medium tank. It was equipped with a 30-ton, power-driven winch which could be employed with a turret mounted, fully rotatable, robust boom which incorporated two extendable support jacks. The boom had a five-ton capacity lift without the jacks, six tons with the jacks anchored on the hull, and 15 tons with them deployed on the ground. In British service, it was named the Grant ARV Mark II. Trials between it and the Churchill ARV Mark I were conducted in Italy and as could be expected the Churchill ARV fared poorly in comparison, underscoring the need for a home-grown design incorporating a power winch.

Of interest though is that the M31 and M32s were employed in British and Commonwealth REME units, not so much as ARVs in user units, but primarily in rear area workshops where their robust jib cranes and winches were useful in removing and installing heavy assemblies. While an armoured capability was not required at the Second or Third Levels, REME doctrine of the period dictated that these major repairs be conducted there, and the end result was that they were used as cranes more so than as ARVs.

To address the shortcomings of the ARV Mark I design, REME established a local Mechanical Warfare Experimental Establishment in Italy. It married a Churchill hull with a power-driven winch sourced from a Diamond T soft skin recovery vehicle. A Morris Commercial engine drove the winch and while the conversion was reported to be successful, it never entered production.

Comparisons with the M31 really weren't really necessary to identify the faults of the Mark I design as operational experience in North Africa and Tunisia had already demonstrated that soft skin recovery vehicles and armoured tugs had significant limitations and shortcomings. The consensus of opinion was that the next generation ARV should continue to be based on existing tank types to provide comparable protection and speed with the AFVs they were supporting, while also maintaining standardization in the supply chain. Furthermore, reiterating that which ERS already knew, it should be equipped with a power-driven winch for the recovery of, and suspended towing of vehicle casualties, and for employment with a portable jib boom for major component lifts. The latter requirement illustrates that in ERS at least, there was an appreciation that the current recovery doctrine needed to evolve to enable major repairs to be conducted closer to the battle zone.



The earth spade anchor, held in place by turnbuckles. The four-foot Hollebone towbar and 15-ton snatch block are stowed on the side of the hull. Just visible under the Sherman Vc stowage bin is the aperture in the superstructure for the winch cable.

ARV Mark II

In 1943, ERS began development on what was to become the ARV Mark II. This design was also a conversion based on existing tanks, but it was restricted to the Sherman, Churchill and Ram II. The Ram II shared the same basic mechanical components as the Sherman, and as it was to be relegated to a training rather than operational role, it made good sense to experiment with it as a platform for an ARV. Conjecture is that it may also have been included in the project to alleviate American concerns that the British Army was diverting far too many Shermans for specialty conversions.

Whatever the case, the main design change and improvement over the Mark I revolved around the inclusion of a power winch, examples of which were finally sourced from Crofts of Bradford. At least one pilot model was converted from a Ram II cruiser, four were based on the Churchill, and an unknown number of Sherman Vs were converted. In the end though, only the Churchill pilots would see operational use before the war ended. While production contracts were initially signed for 500 Mark II ARVs in total, the end of hostilities resulted in the cancellation of commercial production orders. Additional conversions, however, may well have been completed by REME workshops shortly after the war. The Ram ARV Mark II may have been intended to support Royal Artillery, Sexton equipped self-propelled artillery regiments in the post war years, but there is presently no available evidence indicating that it actually did.

The ARV Mark II Described

The ARV Mark II design, regardless of which tank type was converted, essentially followed the same pattern, with only detail changes in regards to the fabrication of component parts and stowage arrangements. For the purposes of this article, the following description will deal primarily with the Ram II conversion.

The provision of a power winch involved removing the turret and replacing it with a fixed superstructure that was fabricated from 40mm thick armour plate on all sides. It fully enclosed the turret opening in the hull and also housed the Croft's winch. A dummy gun barrel on the front wall of the superstructure was mounted on an angle to the left, so it wouldn't interfere with the winch cable. The four-piece roof assembly was composed of 14mm thick plates. These removable plates, which allowed access to the winch, were bolted to the superstructure framework. There were two simple drum style cupolas located on the forward sections of the roof, both incorporating split hatches. The commander's cupola was on the left and it incorporated a periscope in the leading flap of the hatch. In comparison to this cupola design, hexagonal shaped cupolas also appeared on the Sherman ARV Mark II.

The winch itself was a two-speed design with a direct pull capacity of 25 tons. An improvement over existing American winches was that it was equipped with a paying-on/tensioning device that prevented the cable from being strained, and thereby weakened, due to irregular overlapping when it was coiled onto the drum. The winch was chain driven from the main driveshaft of the power train and was equipped with 300 feet of cable. Unlike the American M32 ARV, where the cable could be paid out to the front or rear, the Mark II had only one aperture located on the rear plate of the superstructure.

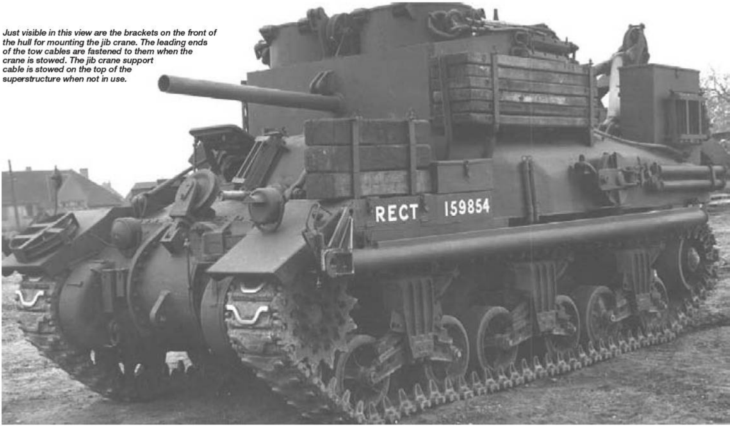
A fixed jib, with a lifting capacity of 15 tons, was installed on the rear of the hull for use in suspended towing of vehicle casualties. A fairlead roller assembly, similar in design to that of the German *Bergepanther*, was located just forward of this fixed jib, on the engine deck.

The Mark II inherited the same basic portable jib boom design from the Mark I. The lugs located on the differential and final drive housing on the Sherman ARV Mark I were used with special adaptors to mount the boom legs whereas in the Mark II design, there were brackets welded to the front of the upper hulls of the Ram and Sherman for this purpose. When not in use, the boom legs were broken down and hung on either side of the lower edges of hull, while the sheave was stowed in a bracket on the right front fender. The lead end loops of the tow cables were connected to the brackets when the jib boom was stowed. The portable jib boom had a capacity of a 7.5-ton lift. There is some indication that early on in the Ram ARV Mark II's development, lifts were made with a simple, hand-operated block and tackle, but when comparing it to photos of the Sherman and Churchill versions, it is obvious that the Ram version was also rigged for employing its winch when making lifts.

Compared to the American M32 ARV, rigging a Mark II ARV for a lift, or for winching from the front of the vehicle, was somewhat more complicated in nature. In the M32, the winch cable could be paid out from a rear aperture for towing or recovery tasks. It could also emerge from a port in the front of the fixed superstructure for use with its A-frame jib boom. Lastly, it could be paid out from an aperture in the front of the hull for use when winching from the front. In the British design though, the cable could only be paid out through the rear aperture. For self-recovery, recovering a vehicle casualty from the front, or when employing the portable jib boom, the cable had first to be threaded through the fairlead rollers and then around the rear jib sheave. It was then brought forward over the fixed superstructure and across a second sheave located on the front edge of the roof. It was then threaded under a third sheave mounted on a swivel bracket located on the differential and final drive housing. Finally, it then passed over a fourth sheave on the portable jib boom.

As with the earlier Mark I, there was a swivel towing attachment mounted on the towing lugs on the rear of the lower hull. A large single towing lug, similar to that on the Churchill tank, was welded to the front of the differential and final drive housing of both the Ram and Sherman versions.

Provision for locking the front and rear bogie units when employing the portable jib boom was made by welding brackets to them, through which steel pins could be quickly inserted, thus eliminating the movement of the suspension arms when under load. The pins were stowed on both sides of the hull when not in use. This was a quick and simple procedure compared to the

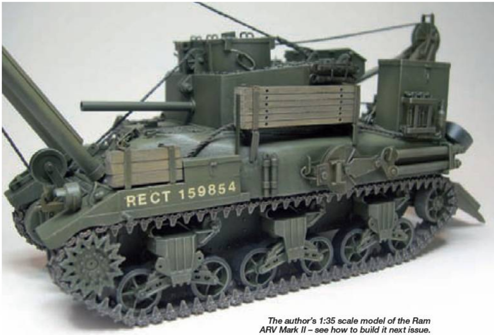


Just visible in this view are the brackets on the front of the hull for mounting the jib crane. The leading ends of the tow cables are fastened to them when the crane is stowed. The jib crane support cable is stowed on the top of the superstructure when not in use.

M32 where special limiting brackets had to be bolted in place.

Spacious, fabricated bins mounted on either side of the Ram's engine deck, similar in appearance to those that appeared on the Ram ARV Mark I, provided stowage for hand tools and auxiliary recovery equipment. The main difference was that these bins were welded directly to the hull, whereas in the Ram ARV Mark I, they were attached to sheet metal brackets that were a part of the original cruiser design. Grouser racks were welded to the outer sides of the bins and a methyl bromide fire extinguisher was mounted behind each grouser rack. In addition to the two large bins, a standard Sherman Vc Firefly stowage bin was bolted to the rear wall of the fixed superstructure. Gun planks were carried in three racks; two on either side of the superstructure and one on the left side front fender. Both versions of the Hollebone drawbar; the standard six-foot long one for use with British tanks and the shorter four-foot version for American built AFVs, were stowed on either side of the hull. A 15-ton capacity snatch block was stowed on the left side of the hull. A total of four Holdfasts were carried, together with the required number of spikes. Two spare road wheels were mounted on the rear corners of the hull and pioneer tools were located on the engine deck. Six spare track blocks were carried in a rack on the right side of the fixed superstructure and a mechanic's swivelling vice was mounted on a curved bracket on the differential and final drive housing.

One of the major shortcomings of the M32 design in British eyes was the lack of a spade anchor, the inclusion of which would increase the ARV's capacity as an anchor beyond its own weight when winching a derelict. Towards that end, a spade anchor was included in the Mark II design. It was simple in concept, rugged in design, and was hinged on brackets at the rear of the hull so it could be raised or lowered by the winch cable. The underside of the anchor had a raised, three-panel, spade-shaped assembly. With the spade fully dug into the ground, the winch was capable of a 75,000-pound pull. In the stowed position, the anchor was held in an upright position by two turnbuckles fixed to the legs of the rear jib.

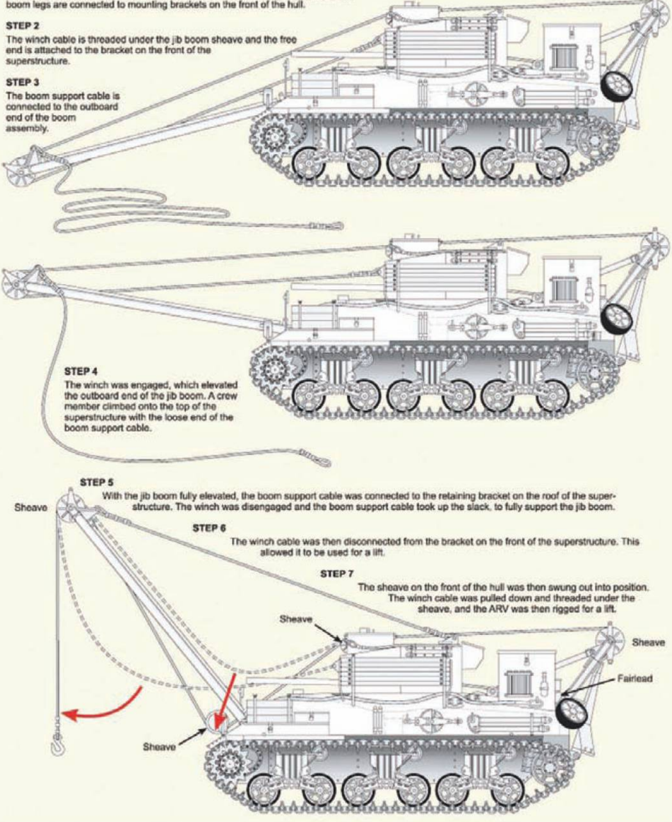


The author's 1:35 scale model of the Ram ARV Mark II – see how to build it next issue.

The end of hostilities put an end to further development of the ARV Mark II design. In the immediate post war years, REME continued using soft skin recovery vehicles together with the existing Churchill ARV Mark IIs.

History repeated itself during the Korean War when the British Army found itself without an ARV that could handle the heavyweight Centurion. A few damaged Centurion gun tanks were hurriedly converted into turretless armoured tugs and while they performed well in Korea, they suffered from the same limitations as their predecessor Mark Is of the Second World War. The Centurion Tower, a REME conversion equipped with a capstan and 300 feet of cable, appeared in 1952, but it too lacked a power winch and its name illustrated exactly what it was only good for: towing other tanks. The Centurion ARV

Rigging The Jib Crane For A Lift



STEP 1

The detachable jib components are assembled by the crew. The pivot ends of the boom legs are connected to mounting brackets on the front of the hull.

STEP 2

The winch cable is threaded under the jib boom sheave and the free end is attached to the bracket on the front of the superstructure.

STEP 3

The boom support cable is connected to the outboard end of the boom assembly.

STEP 4

The winch was engaged, which elevated the outboard end of the jib boom. A crew member climbed onto the top of the superstructure with the loose end of the boom support cable.

STEP 5

With the jib boom fully elevated, the boom support cable was connected to the retaining bracket on the roof of the superstructure. The winch was disengaged and the boom support cable took up the slack, to fully support the jib boom.

STEP 6

The winch cable was then disconnected from the bracket on the front of the superstructure. This allowed it to be used for a lift.

STEP 7

The sheave on the front of the hull was then swung out into position. The winch cable was pulled down and threaded under the sheave, and the ARV was then rigged for a lift.

Mark I, which was yet another hurried REME conversion based on Centurion Mark 1 and 2 hulls also appeared in 1952, and while it was equipped with an 18-ton winch driven by a Bedford gasoline engine, the winch performed poorly, as did its earth spade anchor, which was prone to distortion, and cracking when under load.

Planning did, however, finally begin in 1951, concurrent with these other conversions, on what was eventually to become the successful Centurion ARV Mark II design. It would not appear until 1956 but it was finally, official recognition that a purpose built ARV, equipped with a power-driven winch, was a necessity on the battlefield. ■

Next Issue: Modelling the Ram ARV Mark II

Taking the Strain

The recovery of an armoured vehicle is often conducted in challenging terrain. In such cases, rolling and grade resistances can significantly effect the total resistance in extricating and moving the vehicle. In many cases, a direct pull would exceed the capabilities of the ARV's winch.

Mechanical Advantage

The solution to the problem is to increase the capability of the winch by means of achieving a "mechanical advantage". This is accomplished through the use of auxiliary recovery equipment.

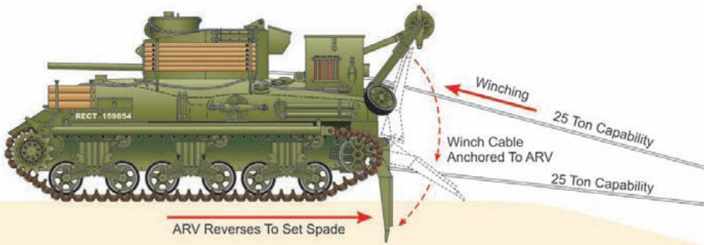
Rigging a single moveable pulley to a twenty-five ton winch (2–1 layout), would double the winch's capacity to fifty tons. This is referred to as a simple pulley system. A 3–1 layout, which would combine both moveable and fixed pulleys, is called a compound layout. It increases winching capability to three times the direct pull rating, thereby enabling a twenty-five ton winch to pull a seventy-five ton load.

In the accompanying illustration, as the Ram ARV Mk II's winch was insufficient for a straight pull in excess of twenty-five tons, a single moveable pulley (snatch block) would be employed in a 2–1 layout, thus doubling the winch's capability.

Employing The Earth Anchor

In normal circumstances, the earth anchor was stowed in its raised position by means of turnbuckles which held it in place against the rear jib. When extra purchase was required to winch a derelict, the spade was lowered by use of the winch cable until it rested on the ground. The ARV then reversed, which caused the teeth of the spade to dig into the ground. The ARV continued to reverse, forcing the anchor to pivot downwards and dig into the ground until it contacted the pivot bracket supports which acted as stops. These prevented the ARV from riding up and over the spade.

Employing a 2–1 Layout



Calculating Total Load

Ram ARV Mk II: 25 Ton Winch
Churchill Mk VII: 40 Tons
15° Shallow Mud Covered Slope

Gradient Resistance = weight of derelict x (degree of slope divided by factor 60).
40 x (15 ÷ 60) = **10 Tons**

Rolling Resistance = weight of derelict divided by factor 3 (for shallow mud).
40 ÷ 3 = **13.3 Tons**

Safety and Frictional Loss Factor = 25% of the total gradient and rolling resistance.
23.3 x 25% = **5.8 Tons**

Total Load = Gradient Resistance + Rolling Resistance + Safety and Frictional Loss.
10 + 13.3 + 5.8 = **29.1 Tons**

Rolling Resistance

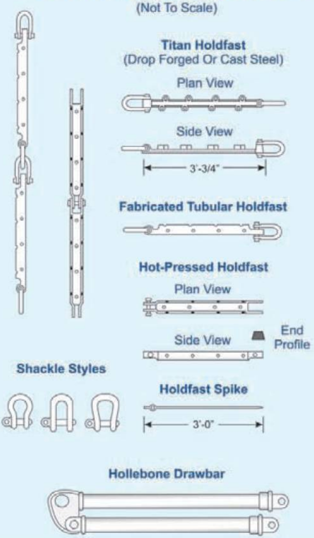
This is the pull required to move a vehicle on level ground. It is a function of the ground resistance, wheel diameter, width of tyre or track, etc. When performing estimations, all of these conditions must be borne in mind.

Roughly, the following figures can be used:

Smooth Road	$\frac{\text{weight of vehicle}}{25}$
Grass	$\frac{\text{weight of vehicle}}{7}$
Gravel	$\frac{\text{weight of vehicle}}{5}$
Soft Sand	$\frac{\text{weight of vehicle}}{4}$
Shallow Mud	$\frac{\text{weight of vehicle}}{3}$
Heavy Mud & Bog	$\frac{\text{weight of vehicle}}{\text{2 or more}}$

Basic Recovery Equipment

(Not To Scale)


Titan Holdfast
(Drop Forged Or Cast Steel)
Plan View
Side View
3'-3/4"
Fabricated Tubular Holdfast
Hot-Pressed Holdfast
Plan View
Side View
End
Profile
Shackle Styles
Holdfast Spike
3'-0"
Hollebone Drawbar

Holdfasts

In this instance, the Churchill is roughly a thirty ton total load for purposes of recovery, which exceeds the ARV's dead weight as an anchor. Anchors can consist of convenient natural features such as trees and large rocks, or man made articles such as buildings, another vehicle, the ARV itself, or Holdfast earth anchors.

Holdfasts were included as part of an ARV's standard recovery equipment for use as anchors in compound layouts, indirect pulls, and in circumstances where other vehicles or natural anchors were unavailable.

A single Holdfast was secured by eight spikes driven into the ground in a cross-hatch pattern. Each spike was set at a forty-five degree angle and was rated at one half ton. Therefore, each Holdfast had an individual anchor rating of four tons. For safety concerns, it was recommended that no more than three Holdfasts were to be shackled together, for a maximum total anchor rating of twelve tons.

Snatch Blocks

There were three main snatch blocks utilized in recovery operations. The Snatch Block General Service had an eight ton rating, the Winches Portable Two Speed – Blocks Snatch was rated for twelve tons, and the Snatch Block Service Pattern had a fifteen ton rating.

Shackles

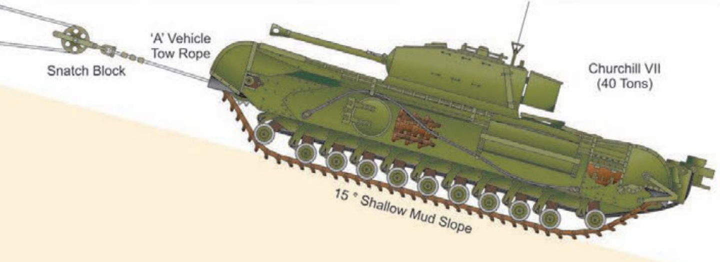
Commonly used shackles were rated at three, seven, twelve and twenty ton capacities.

Drawbar, Hollebone Type

There were two main types of Hollebone drawbars employed for controlled towing; the six foot version for British manufactured AFVs and a shorter four foot edition which was used for American AFVs. The shorter version was required because the towing eyes on American AFVs were closer together.

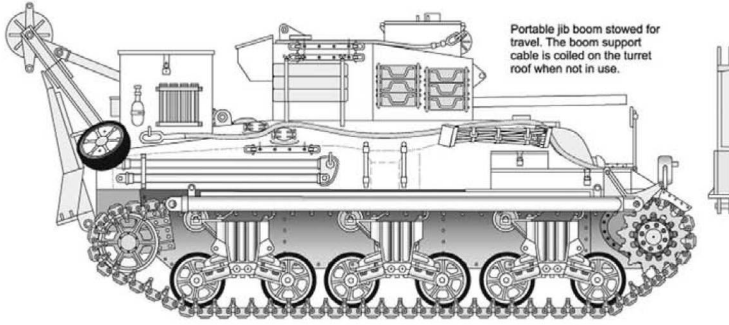
Ropes and Cordage

Winches were fitted with wire ropes and all ARVs were equipped with ropes, rope slings and tow ropes composed of wire rope or composite chain.

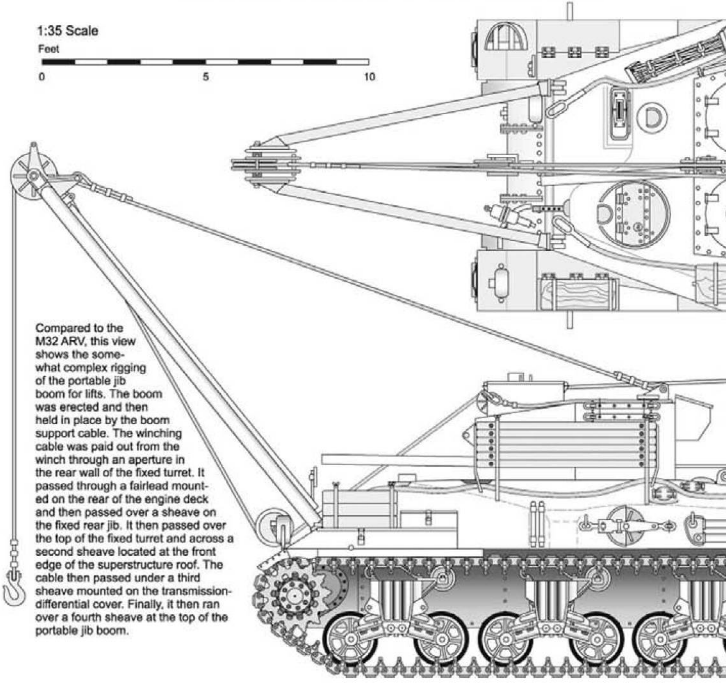

'A' Vehicle
Tow Rope
Snatch Block
Churchill VII
(40 Tons)
15 ° Shallow Mud Slope

This illustration is based on information appearing in the following British Army manuals:
Guide to Recovery, Layouts for 'A' & 'B' Vehicles, Recovery Notes and Vehicle Data
Manual of Recovery: Apparatus, Recovery – General, 1945
Notes on the Use of Cross Country Gear

© Christopher Johnson

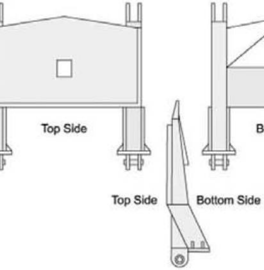


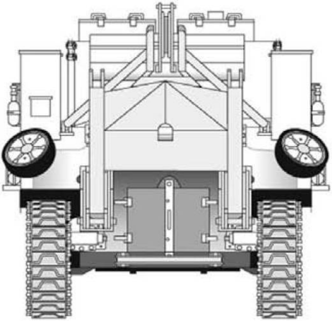
Portable jib boom stowed for travel. The boom support cable is coiled on the turret roof when not in use.

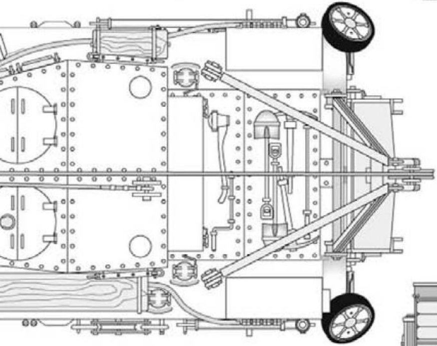


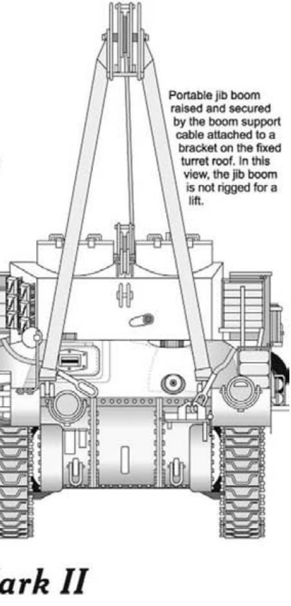
Compared to the M32 ARV, this view shows the somewhat complex rigging of the portable jib boom for lifts. The boom was erected and then held in place by the boom support cable. The winching cable was paid out from the winch through an aperture in the rear wall of the fixed turret. It passed through a fairlead mounted on the rear of the engine deck and then passed over a sheave on the fixed rear jib. It then passed over the top of the fixed turret and across a second sheave located at the front edge of the superstructure roof. The cable then passed under a third sheave mounted on the transmission-differential cover. Finally, it then ran over a fourth sheave at the top of the portable jib boom.

Earth Spade Anchor

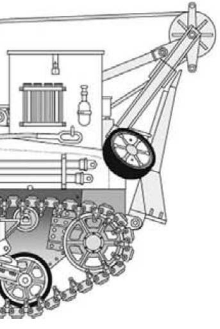








Portable jib boom raised and secured by the boom support cable attached to a bracket on the fixed turret roof. In this view, the jib boom is not rigged for a lift.

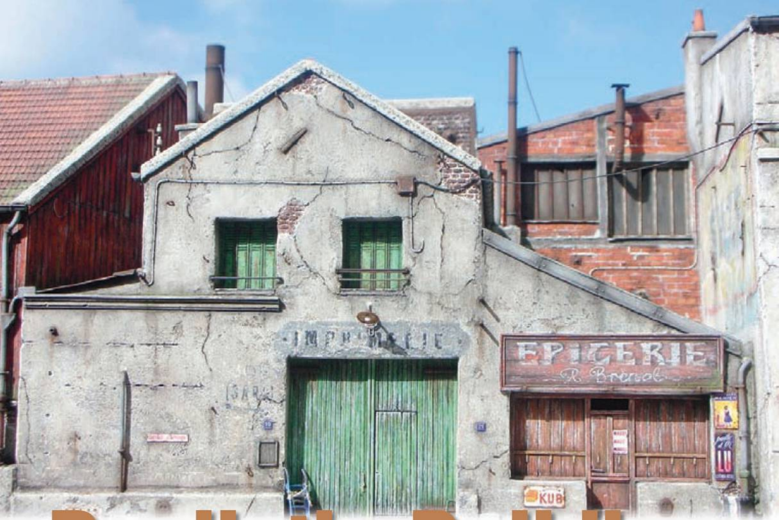


Bracket on the right front fender for stowing the portable jib boom sheave, when not in use.

Ram ARV Mark II

A British Conversion of the Canadian Ram II Cruiser

© Christopher Johnson



Realistic Buildings

Emmanuel Nouaillier shows how to scratch build and age miniature structures

Some of the 'basic' tools that I use to work the foam and give it some aspects and different alterations in scale. The fine wire brush is used to produce a good looking surface finish in particular cases.

To emboss bricks or cobblestones into the foam, I've made tools from old paintbrushes with no more bristles left, and shaped the ferrules into the form desired with fine pointed pliers.

This is my first article for *Military Modelling* magazine that will introduce my personal approach and techniques for scratch building and ageing buildings, pertaining to the typical northern French urban landscape of the 1940s and early 50s.

I believe that a proper rendition of textures and adequate weathering of the different elements is important when making a miniature scene, where the optimal development of each small detail of a diorama becomes more a necessity to modellers who want to show, with utmost realism, models that are better detailed and weathered

I will explain stage by stage in future articles how to create peculiar materials and elements and how to give the models 'life' while employing generic methods.

In order to set my modelling efforts into context, I think it would be useful to give you some background which should help you understand the reasons for the choice of proceeding outside the normal presentation of 'military modelling', as it's habitually practiced, where armoured vehicles are introduced in the middle of ruins - sometimes very realistic, but often showing kits of houses, buildings, that are ready to build and paint. My approach is different.

Inspired by the wish to capture 'atmosphere' in miniature, I have always made dioramas that in the course of the time have revealed an artistic approach. Having spent a long time with general military modelling and then turning to figures for a while, I decided a few years ago to make my first diorama that had as its only topic a very shaded, old urban and industrial ambience. Applying the methods of painting and ageing I'd learnt, and building the scenes for their 'visual aspect', my only fixed idea was to be very close to reality as possible in the effects of decay and deterioration of building materials and all this in 1:48 and 1:72 scales. I have come a long way since that first experience and I have also discovered the possibilities offered by some unknown, or rather lesser known, materials for creating many desired elements on which I like to simulate ageing effects and create an overall drab aspect. Generally, to create miniature buildings I have relied upon four main materials: feather board (polyurethane foam sandwiched between two sheets of card), Forex (a light expanded PVC), coating and plastic card.

ICKELAGE
ERE & FILS
ES
LOUIT
CREMERIE

and Façades

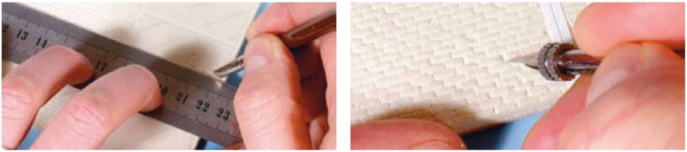
Peeling off the outer card of Feather Board will be very interesting for the modeller who wants to create his own brick wall, concrete surface or cobbled street.

Feather Board

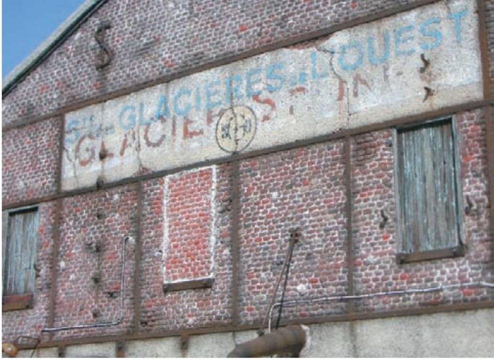
Feather Board is made with a central core of polyurethane foam between two layers of thin card. It is perfectly flat, even over large areas (one metre square) and very light. It is available in various thickness (3mm, 5mm and10mm) and I get mine from www.zebulon-vpc.com

The foam core is compatible with all sorts of adhesives as well as all paints that we use for modelling. Used as it comes, this material is perfectly suited for creating the basic shell of a building, then you can glue embossed plastic sheets or card onto it, or apply a layers or coats of plaster to simulate the façades of particular urban buildings or any specific decorative features.

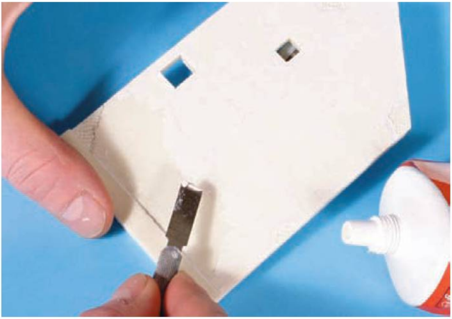
There is another less-known, yet very interesting method, which involves peeling off the outer card. Thanks to the nature of the foam, it can be scribed, worked, embossed with the aid of hand-made punches, 'matrixes' or ordinary tools such as scribers, blunt scalpel blades, points of needles, fine wire brushes, etc. Thus it's possible to obtain all sorts of effects and to make cobbled streets, brickwork, concrete, and stones, as required, to reproduce streets, pavements and all sorts of façades and buildings. In addition to this, the nature of the foam is


For cobblestones and stone sets, pressing one of the tools into the foam individually reproduces the stones. If you wish, you can stamp with deeper cuts for deeper joints, carve off missing bricks or reproduce holes with the point of a needle.

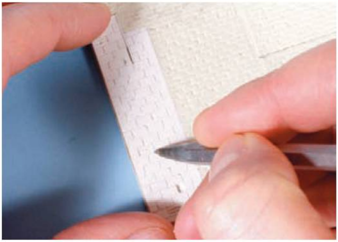
Creating a cobbled street with its typical dips, displaced cobbles and uneven surface will be easy by employing this technique. Here you can see a part of a street in 1:72 scale in the course of being worked.



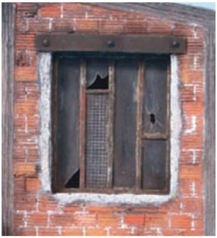
Embossing can take a long time, especially if one undertakes to reproduce large brick buildings. This finished example is a part of the façade of an industrial warehouse.

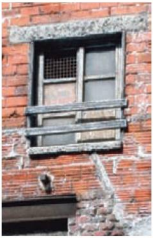


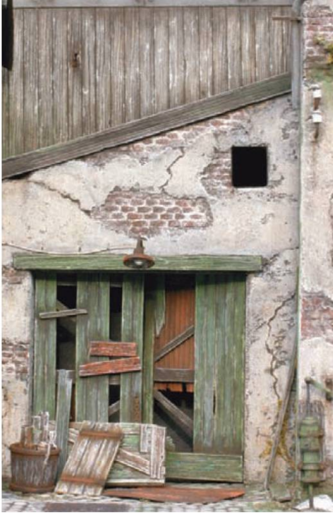
Applying a layer of coating onto foam to simulate the façades of particular buildings will perfectly convey the decay and the state of degeneration.

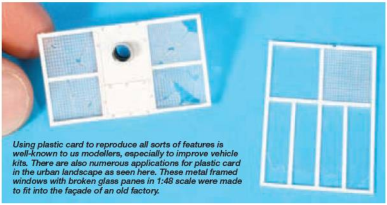


Scribing brick bonds in plaster onto Forex can be a tedious work, but it produces the textures that will help to create typical buildings or parts of them. As for the red bricks, some realistic alterations and additions will be added by engraving.

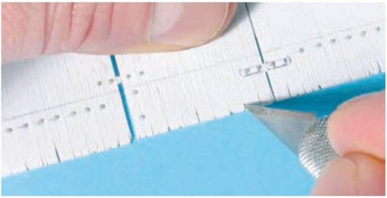


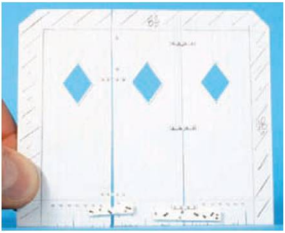




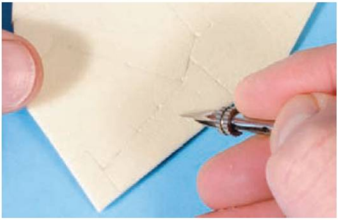


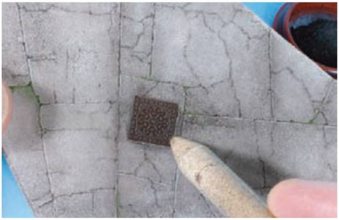
Using plastic card to reproduce all sorts of features is well-known to us modellers, especially to improve vehicle kits. There are also numerous applications for plastic card in the urban landscape as seen here. These metal framed windows with broken glass panes in 1:48 scale were made to fit into the façade of an old factory.



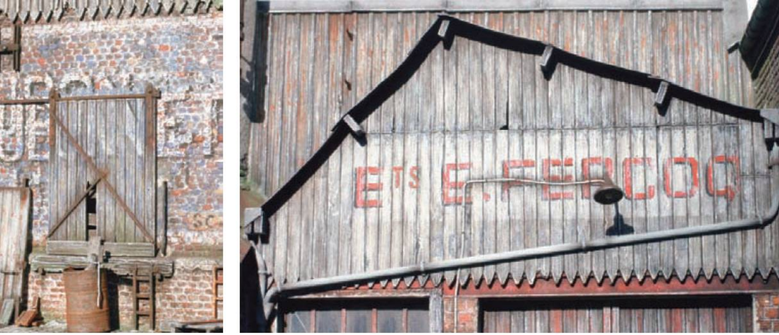


Scribing onto plastic card will allow you to create doors with the appearance of decay and dilapidation by performing some incisions or engraving some of the joints a little deeper… Like this old garage door I made in 1:48 scale.

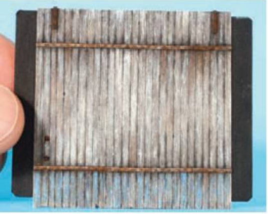




Here's part of a concrete yard in 1:72 scale in the course of being worked. Fissures and joints are made with an engraving point and the point of a needle. An attractive surface finish will be later given with a fine wire brush. The surface after painting and ageing where the porous texture of the foam is wholly adapted to represent this kind of material. Details such as sewer hatch covers, manhole and other small covers, etc., are treated with pigments and graphite powder to enhance their surface finishes.

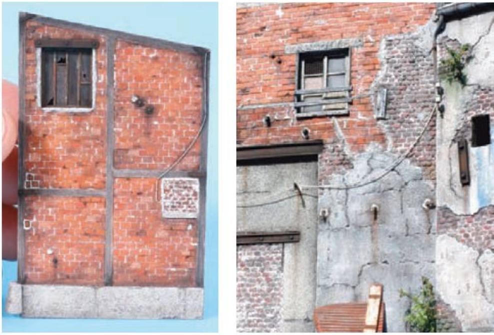


ABOVE: Other results of faded and weathered paintwork on wood with variations in the planks, different shades of colour, rotten planks and so on...



Convincing chipped paint in 1:72 scale needs some skill on the part of the modeller. Check out the result of this garage door in the course of being detailed with old metal plates.

well-suited to imitating the surface of the brick, the finish of the stone, or the texture of concrete. Furthermore, for a cobbled street you are able to reproduce the worn patches caused by road traffic by simple depressions in the foam, or to imitate cracks in brick walls due to stress, and breakage of the rendering between the bricks.



These walls seen after the painting and ageing phase clearly show the results obtained to represent a building that shows long time weathering by the elements.

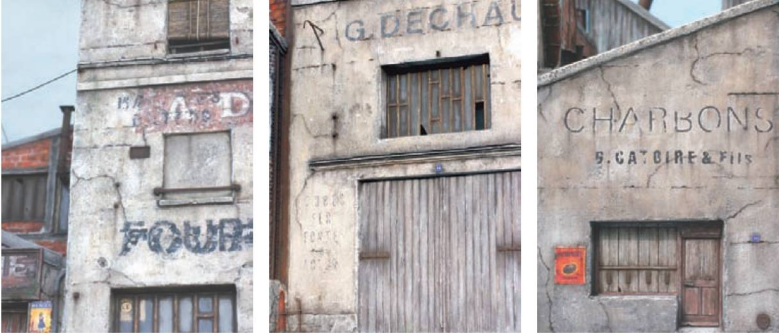
BYRRH
VIN ONI UE

The micro-painting stage is required to reproduce the faded paint of lettering on wood cladding for extra realism, as well as the weathered paint of an old advertisement on the cracked plaster of this façade.

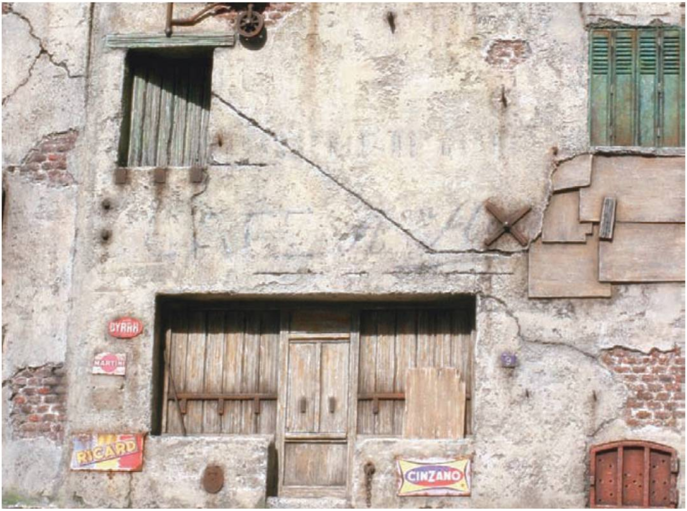
Forex

Forex may be an unfamiliar product to most modellers. It is a lightly expanded PVC and comes in sheets, which are perfectly flat. It is used principally for shop fitting, but can be very useful for modelling purposes, notably thanks to its surface finish, which is less smooth than plastic and slightly softer. Like feather board it can be obtained in various thicknesses; 1/2/3/4/5mm and like feather board this material is easy to glue with contact adhesive or cyanoacrylate and used in this way Forex is also ideal for reproducing basic shells.

I use Forex for reproducing very precise construction materials, whether scribing it with tools or using it without any form of specific treatment (architectural details where the natural 'finish' of the product makes it suitable for imitating window sills or cement rendered façades. In addition to these applications, the material can be scribed and shaped, which should appeal to the modeller



Some finished 1:72 scale façades created using foam, coating and scratch built details.



who wants to reproduce certain types of brick bonds in plaster, but the possibilities are evidently and not just limited to the simulation of this type of brickwork.

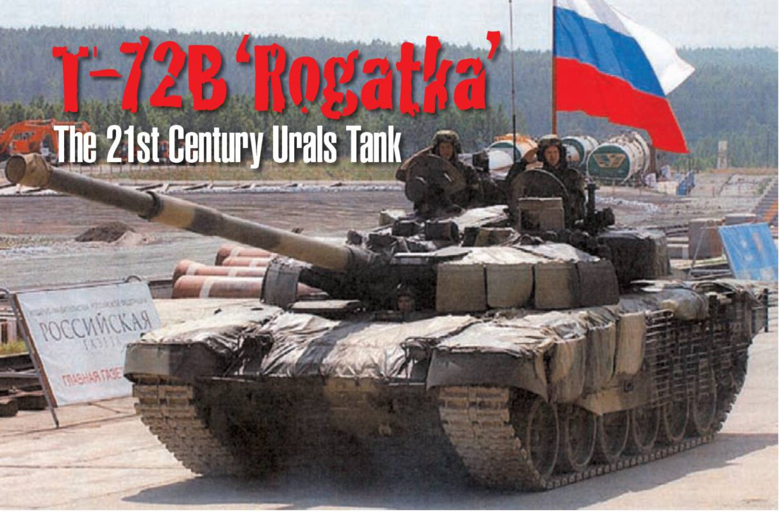
Plastic card and 'micro-painting'

In my case, plastic card is principally employed for scratch building particular elements in urban or industrial landscapes (yard gates, doors to complete warehouses, etc.) or detailing buildings where I sometimes use Evergreen styrene sections. However, I also use plastic card for another application - scribing it to represent fine wood grain. Why? In the first place the grain of even close grained real wood is still too big and doesn't look right when used in small scale buildings. In the second place, plastic card is a material with which most of us are used to working, painting and weathering.

Turning to the weathering process, the 'micro-painting' phase is a widely used and well known-method that will be useful on particular details and elements in the urban landscape. This technique employed only for some weathering effects or to mimic precise alterations on wood, metal, plaster, cement, etc., will add a realistic touch that makes the result different. I use it to reproduce washed paint on wooden cladding, the rusted areas of a sliding door, chipped paint of old advertisements painted on walls, the shades of decay on a façade. ■

T-72B 'Rogatka'

The 21st Century Urals Tank



In the first of a two-part feature Cookie Sewell offers a rebuilt T-72 with all of the whistles and bells in place

TOP: The T-72B 'Rogatka' as paraded at Nizhniy Tagil in the summer of 2006. The giant Russian flag is apparently an option! (Courtesy NGIC) ABOVE: The 2006 Nizhniy Tagil Exhibition also was the first time that new Russian tanker's uniforms were put on display. Similar to the old American battle dress uniform (BDU) pattern, it is not yet possible to determine if there is a hardened panel under the camouflage top to the 'shlemofon' type headsets or not.

No other modern tank has achieved the success – or notoriety – of the Soviet era T-72 Main Battle Tank family. With as many as 18,000 tanks built or assembled by a number of countries, mostly centring on Russia, it is the most widely proliferated and used modern main battle tank in the world today. But it has run its course, and as such is what the Russians call 'morally obsolete.'

Even the newest members of the family, the T-72B and T-72B1 models, entered service over 20 years ago and the last ones rolled off Russian production lines in the very early 1990s. (The T-90 is an improved variant for those who want to quibble, but when a Russian says 'T-72' it refers to the T-72, T-72A or T-72B and not the T-90.)

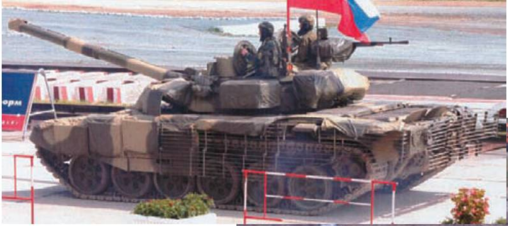
Right now the Russians themselves field only about 6,000 of more than 25,000 tanks on the books that are worthy of upgrading and maintaining in service. Of that number, about 3,000 are considered fresh enough to maintain in units and 'ready to go', and the rest will remain in depots. What to do?

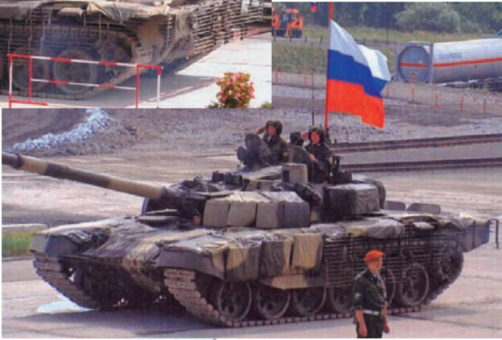
As a result, the Russians are now stating that they have found a solution in the rebuilding programmes they are prepared to carry out. The T-72B model tanks will be 'redone' under a program called 'Rogatka' to rebuild them to contemporary standards. (*Rogatka* is the Russian term for a *chevaux de frise* or 'Friesian horse'; this is a fieldwork made of a log with sharpened stakes driven through it at right angles to form an X-shaped barrier against infantry.)

Early History

The T-72 underwent a rather circuitous route to life, mostly based on the designers led by Leonid Kartsev at Factory No. 183 in Nizhniy Tagil – the famous 'Vagonka' or Ural Railway Wagon Construction Factory as it was known – getting around a dictum by then Minister of Defence Dmitriy Ustinov that they would have to build the most modern tank in the world in 1969 – the T-64A, designed in Kharkov by Aleskander Morozov. This tank, which began its own long and tortured development in 1953, had already undergone two major revisions before the first full-bore production variant appeared in 1969.

In 1967, Factory No. 183 was given the mission to prepare to build the T-64A as well as prepare an alternate design based on that tank for a 'mobilization' variant that could be built faster. The Soviets were watching the events in Southeast Asia and were worried about US 'aggression' and the possibility that NATO would attack the USSR if things did not turn out in the Soviets' favour. But

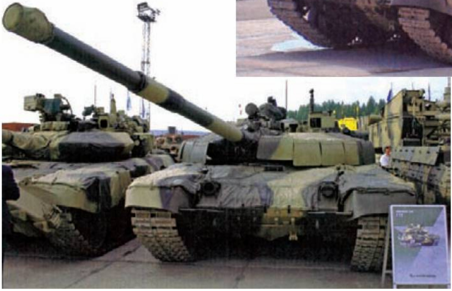


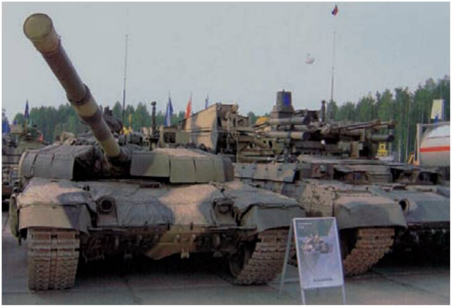


ABOVE: A rear view of the passing T-72B 'Rogatka' tank showing the extent of the 'Reshyetka' grille armour and the 'Nakidka' covering over the sides, rear deck and stowed equipment and bins on the turret. (Courtesy NGIC)

RIGHT: Another view of the T-72B 'Rogatka' as paraded at Nizhniy Tagil from another photographer.

BELOW: The 'Rogatka' – here labelled as 'T-72 Modified' – and parked for a static display. The tank to its left is a T-90 Model 1999 (or T-90A) with a mine plough system installed. (Courtesy NGIC)





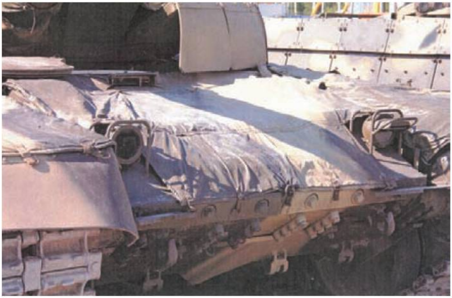
On the other side of the 'Rogatka' tank was its new stable mate, the BMPT 'Ramka-99' vehicle. This is a heavy infantry fighting vehicle that will be converted from T-72A series tanks according to the Russian press. It shares only its lower hull, tracks, engine and some minor systems with the T-90 or T-72B 'Rogatka' tanks. (Courtesy NGIC)

the Soviet factories all suffered from 'NIH Syndrome' – e.g. 'Not Invented Here' – and Kartsev was no different.

Kartsev had his own ideas of what would make a good tank – a very robust and reliable suspension created and tested on two prototype tanks, Object 140 and Object 167, a new cassette-type autoloader designed for operation with both the 115mm 2A21 and 125mm 2A26 tank guns, a new transmission design, and a new engine package called the V-45 in its prototype form. (For more of the history of Object 140 and Object 167, see ***Military Modelling*** Vol. 37 No. 6, 11th May 2007.)

Once stuck with the T-64A, Kartsev very cleverly asked if he could make minor changes here and there to 'adapt' the T-64 design to the production systems in use in Nizhniy Tagil, as well as make some changes to ensure that the 'alternative' engine would fit and work in the tank. The T-64 was powered by a 700hp five-cylinder opposed piston diesel engine based on pre-WW2 Junkers diesel aircraft engine designs, and was a very 'iffy' power plant that aside from being 'capricious' was expensive and complex to built. Kartsev had received the supplementary task to see if a V-2 type diesel engine could be mounted in the T-64. The engine selected was the 630 hp V-45, a prototype of a V-2 based design which in its developed production form as the V-46 put out 780 hp, and seemed to meet the requirements for an alternative engine if the 5TDF engine of the T-64 failed or proved too complex. The first vehicle, Object 172, was essentially a T-64A with the V-45 engine, but little else changed, and it was a clanger.

As a result, Kartsev asked the ruling powers if he could make some 'minor' modifications to the design to 'improve' its suitability for production and received



The glacis of the 'Rogatka' with its 'Relikt' armour array covered by 'Nakidka' blankets. Note that the fender splash guards had to be relocated with the presence of the new front panel for the 'Relikt' array, as well as the new position of the tow hooks on the lower glacis and the headlights on top of the armour array. (Courtesy NGIC)

grudging permission. Once he had that permission, Kartsev changed the entire design, keeping only the shape of the front of the hull and general outline of the turret. The T-64 received the Object 140/Object 167 running gear of medium diameter cast aluminium wheels with rubber tyres, a new rear end to mount the V-45 engine and its 'guitar' shaped transfer case, a completely new 'carousel' type autoloader holding 22 rounds in cassettes with the projectile on the bottom and the propellant charge on top, new RMSh tracks which were tested on Object 167, and other modifications. When the Main Tank and Automotive Directorate (GABTU) found out what Kartsev had done, they were furious and called him back to Moscow for an appropriate verbal drubbing …but they let the new tank progress.

The next three years were spent trying to prove that Kartsev's developed tank variant – now called Object 172M – was inferior to the T-64A. After long and tiresome trials where Object 172M proved itself better, the tank was reluctantly accepted for service (by Ustinov, not the military, who liked the new tank) on 1st August 1973 as the T-72. However, the new designer was now Venediktov, who received formal credit for the T-72 design.

The tank underwent evolutionary development over the years. In its original form it was a very conventional tank other than its autoloader and three-man crew; it had conventional rolled armour vice the layered or 'combination' armour of the T-64A or its later competitor, the T-80; the T-80 was designed in Leningrad by N.S. Popov, and was basically another reworked T-64A with a turbine engine and different armour arrays.

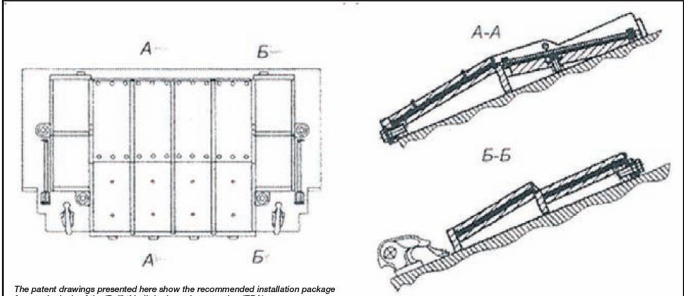
The first major reworking was a project called *Buyvol* (bison) or the Object 172-2M, created in late 1972. This provided the tank with a new armour array (combination armour) in its hull, extra armour on the turret face, an 840 hp V-46F (or V-67) diesel engine, a TPD-K1 laser rangefinder, a 'Buran-PA' day/night sight for the gunner, new commander's sights, side skirts and an improved gun. This tank, still seen as a competitor to the T-64A and T-80, was stillborn and the project terminated in 1975.

The T-72 was offered for sale and licensed production abroad in the late 1970s, with the Czechs, Poles and Yugoslavians all taking up their own indigenous production of the T-72M. This was a down-rated model with lesser armour protection and other changes, but the quality of the build was probably close to equal to Soviet production if not better. Later licensed production of knocked-down kits of T-72Ms and T-72M1s took place in India, Iran and Iraq.

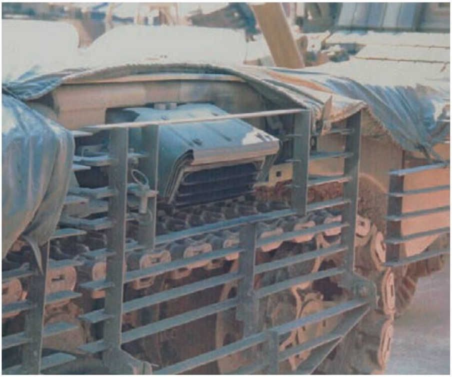
The T-72A (Article 175) entered production in 1979, and it introduced many of the features from the *Buyvol* of seven years earlier; this included the bulged 'cheek' armour, combination armour glacis, and laser rangefinder. Due to the shape of its turret and its dips and bulges, American imagery analysts dubbed it the 'Dolly Parton' tank after the American singer of such stupendous figure. (It gained popularity after Secretary of Defence Caspar Weinberger said he never wanted to hear that name again, so it immediately gained traction with the troops!)

This tank was accompanied by the foreign sales and production variant, the T-72M1, with a similar bulged turret. There were eight different Soviet production series of this tank, all of which differed in minor ways, so it added to the confusion as to T-72 models and who had which ones.

Finally, in 1984 the final main variant of the T-72 series entered production, the T-72B (Article 184). This tank came in two variants – the T-72B which had a laser-guided 'through the bore' antitank guided missile capability, and the T-72B1 which did not. It possessed more changes to the hull armour array as well as a very highly modified turret, which now used hollow compartments in its 'cheeks' and arrays of various plates inside to provide increased protection against discarding sabot long rod penetrator ammunition. In 1985, this tank was also the first one to sport what was termed



The patent drawings presented here show the recommended installation package for a tank glacis of the 'Relikt' built-in dynamic protection (ERA) arrays.



The exhaust snorkels for the V-84MS and V-92S2 are quite different from all other V-2 based exhaust pipes from the T-54 prototypes onward. The three thermal shrouds on the top (but not the lower insulating one with the fender) can be seen here along with the internal baffling and part of the new plenum cover. Also note the gap for access to the GTA-18A intake port cover on the right side. (Courtesy NGIC)

A close-up of the left side 'Resheytka' array that shows how the lower (folding) section projects out further than the upper (fixed) section. (Courtesy NGIC)

'dynamic protection' – explosive reactive armour or ERA in the West – that was attached to posts welded to the glacis and turret; it increased protection against HEAT projectiles such as ATGMs. These tanks received a supplementary 'V' designator (e.g. T-72BV) to indicate that change.

As is not surprising, when this tank came out it quickly was tabbed the 'Super Dolly Parton' due to the extreme projections of the new turret. At least Mr. Weinberger did not comment on that sobriquet!

Follow-on tanks did not fare quite as well. In 1985 UVZ started work on a new 'super-tank' designated Article 187, which got the crew below the turret race and effectively automated the turret's operations, but this tank did not get very far and as a result more conventional designs were used in a more conservative evolutionary method.

The last of the Soviet era T-72 models for domestic use were tanks that were upgraded from T-72B production models. The upgraded T-72 model now incorporated second-generation reactive armour that was built into the tank (4S22 'Kontakt-5' vice the first generation 4S20 'Kontakt-1' add-on protection), replacement of its mechanical 1A40-1 fire control system with a modified 1A45T 'Irtysh' system from the T-80U and T-80UD tanks, and other changes. This tank, designated as the Object T-72BM tank, was basically accepted for service in 1989.

Later, as this tank underwent improvement, it received a new radio set (R-163 'Arbalet' series to replace its R-173 series) and a new idea – electro-optical integrated suppression of laser signals. This device, called the TShU-1 'Shtora', was mounted inside and outside the turret and linked two high-power infrared searchlights, laser warning devices, turret fire controls, and the Type 902A smoke grenade launchers into a unified system to detect, slew the turret, and either blind with light or smoke the laser designator for an ATGM or PGM weapon as well as provide indication to the tank crew as to the location of the threat. This tank, designated as the T-72BU (Article 188), was to enter service in 1991. But…

Soviet Union – End State

At the end of the Soviet Union, in 1990 they entered into the Conventional Forces in Europe treaty that caused them to publish lists of their holdings west of the Ural Mountains. This was an eye-opener for many in the West as it showed which Soviet claims were real and which ones was 'poor analysis' by Western intelligence agencies. Since the Soviets never got rid of anything that could be used in an all out war against an aggressor, later information provided by Lieutenant-General Dmitriy Volkogonov indicated that their total tank holdings in 1990 were just over 77,000 tanks. These included many obsolete WW2 and even pre-WW2 models in the Far East, T-34-85 and IS-2 and IS-3 tanks in storage yards in Siberia, and other vehicles, which were stripped and used as pillboxes along the Chinese border.

The only tanks of immediate interest to NATO were those on its 'doorstep' or the four external groups of Soviet Forces (NGF in Poland, GSFG in East Germany, CGF in Czechoslovakia, and SGF in Hungary) as well as those in the Western military districts in the Baltics, Kalliningrad, Belorussia and Ukraine. While GSFG and SGF were all equipped with either T-64 or T-80 series tanks, NGF and CGF had T-72s of various models as did many of the divisions in the Western military districts.

Here are the overall holdings by the USSR in the forward areas as of 1 November 1990 by their own declaration:

CFE Declaration – Base Statement

Type of Tank	**Total Number in the Forward Area**
T-54	925
T-55	2,297
T-62	1,698
T-64	3,506
T-72	3,947
T-80	4,397
Total	22,325

To figure out what this means, one has to dig into the fine details. The UVZ (Vagonka) factory records indicate over 9,000 T-72s were built for Soviet use between 1972 and 1990. Another 1,304 went to Belarus and 1,600 to Ukraine. Roughly another 1,000 are in the hands of the 'Stans' and other former USSR republics. More than 8,700 others have been either supplied by Russia to other countries or from the four main licensed nations (India has been able to carry out some limited production of its own T-72M1/T-72S tanks.)

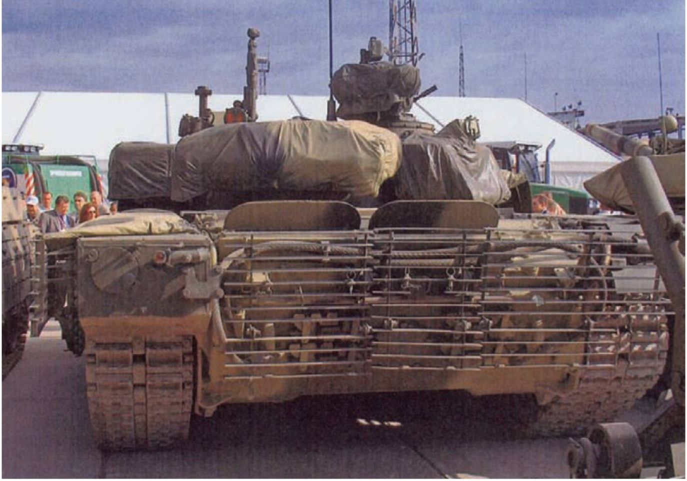
While the numbers are hard to parse, according to Sergey Suvorov, a prolific if not necessarily totally objective Russian author, one tank in four in Russian service (26%) were T-72s of one model or another. The breakout of modern tanks is like this:

Tank Types	**Percentage of MBT**	**Percentage of Tanks**
T-64	28%	20%
T-72	38%	26%
T-80	34%	24%
Totals	100%	70%

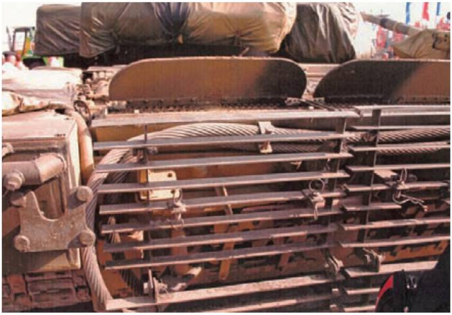
Since the Russians now only claim about 24,000 functional tanks, of which about 6,000 are 'modern' (e.g. T-72B or T-80B/T-80U), it would appear that there are around 9,000 T-72s remaining in Russia of which perhaps 3,100 are T-72B or later models.

Enter the Russian Federation

In August 1991, after 18 months of watching the former Soviet Union collapse, hard-line Soviets attempted a putsch, which wound up with their own removal from power and the rise of Boris Yeltsin as the first president of a more democratic Russia. The new and



The rear 'Reshyetka' arrays. There are now also thermal flaps made from the same basic material as the side skirts attached as heat blocks over the radiator (fan) exhaust grilles at the rear of the hull. As mentioned in the article, even with the new universal tracks note that there are four links of the old single-pin RMSh tracks under the grilles on the rear of the hull. Go figure! (Courtesy NGIC)



Close-up of the rear grilles. Nearly invisible here are the fuel lines for the GTA-18A that run below and behind the tow cables. The 'push pins' with safety snap pints can be easily seen in this photo. (Courtesy NGIC)

freely elected *Duma* now began to take out its revenge on the military, which it saw as having bankrupted the USSR and done little in return. There had also been the humiliating defeat of the Iraqi Army at the hands of the UN Coalition forces six months earlier when the T-72 tanks – admittedly T-72M and T-72M1 models in the hands of non-Soviet trained crews – were obliterated on the battlefields of Kuwait and Iraq. Sales of T-72s immediately vanished with the poor performance attributed to those tanks. In order to try and fix things, as well as put a forward spin on things, when the T-72BU came up for acceptance on 30th September 1992, Boris Yeltsin signed the act, but accepted it for service as the T-90, 'the First Russian Main Battle Tank.'

The first production T-90s looked little changed from the T-72BM or T-72BU. They used the same tracks, the 'Kontakt-5' armour array, and even though the T-90 now had the V-84 engine of the T-72BM/BU, it was a conventional 840 hp engine. The only other external change was a new DVE-BS wind sensor mast associated with the 1A45T fire control system.

Over the years, the T-90s began to evolve. The first thing that changed was the switch to a new series of twin-pin live tracks. These tracks were designed for a test bed T-72 variant dubbed Object 613 and modified in Omsk by KBTM. This tank used tracks similar to those fitted to the T-80 series, and which were now accepted for service as the 'unified' or 'standard RMSh' tracks. These tracks could be fitted with a facing rubber pad for use on paved roads, something never before used by Soviet tanks.

Next the tanks were fitted with a new engine with a modified exhaust system, the V-84MS. The old Soviet tanks all carried a device called the TDA or 'Thermal Smoke Apparatus' that could produce smoke on demand by simply injecting diesel fuel into the exhaust manifold before it exited the side of the tank. That worked in the 1950s and 1960s, but in the 1990s when many opponents had gone over to using low-light-level television or thermal sights which keyed on 'hot spots' it was an Achilles' heel. The new engine uses a 'sil'fon' or tube to pass cold air into the exhaust manifold from the air cleaner that cools the exhaust and reduces its overall heat signature. This is externally seen as a large baffled snorkel that sticks out past the fenders and has insulating shields above it and below it as well as an insulating shield on the plenum cover.

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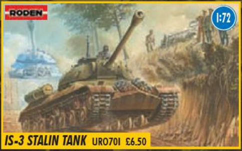

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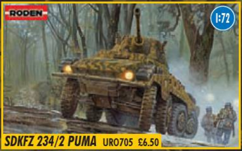

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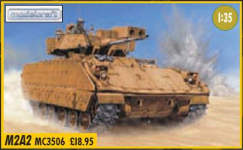
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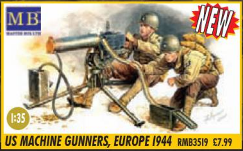

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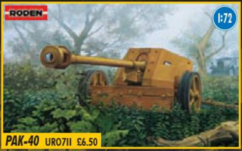

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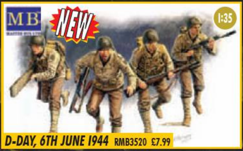

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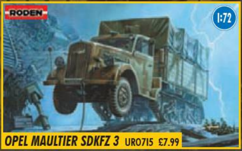

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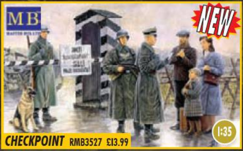

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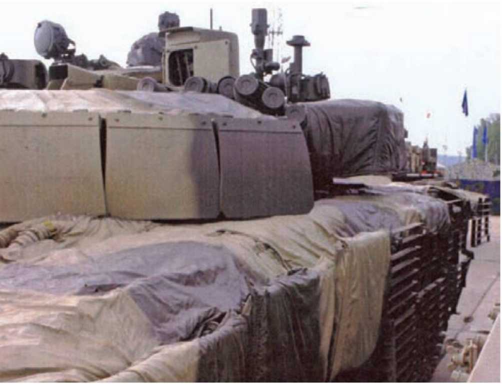


The 'Relikt', 'Nakidka' and 'Reshyetka' complexes are not really complimentary to each other, and as can be seen here it is hard to neatly fit them all onto the same tank. Russian sources indicate these blankets were worn and loose fitting as they had completed 2000 kilometres of running testing. (Courtesy NGIC)

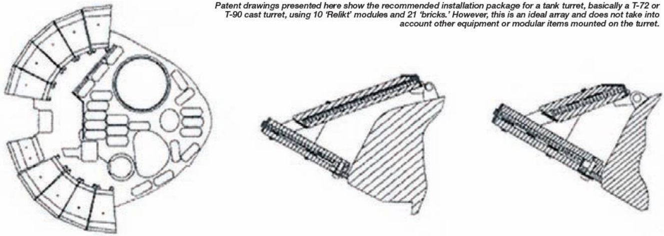
In 1999 the T-90 received a new design of turret made of welded steel plates vice the cast style that had been in use since the tank's creation in 1970. Sometimes called the T-90 Model 1999 or T-90A, this tank has improved armour protection to its turret. But due to a surfeit of conventional arms, and a *Duma* continually suspicious of generals who want 'gold-plated' weapons they will never use, over the course of 15 years in 'production' only about 300 T-90s have been delivered to the Russian Army – about enough for one full division.

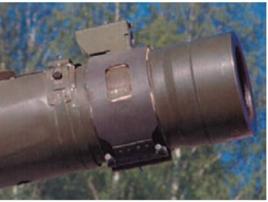
In parallel to this, the Russians offered a T-90S variant for foreign sales, basically no different from the domestic T-90 except for its being fitted with air conditioning. The Model 1999 variant is also sometimes called the T-90SA. India purchased 310 of these two T-90 variants.

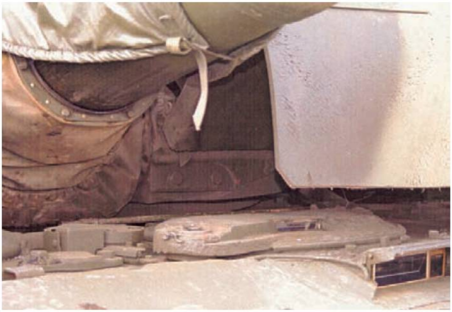
And As For the Rest of the Story…

The problems faced by the Russian Army are neither small nor easily solved – most revolve around money or the lack of it. Even with the ever-shrinking pool of retained units, the Russian Army still feels it needs at least 6,000 tanks on hand. But as many of their experts notice, that equates

Patent drawings presented here show the recommended installation package for a tank turret, basically a T-72 or T-90 cast turret, using 10 'Relikt' modules and 21 'bricks.' However, this is an ideal array and does not take into account other equipment or modular items mounted on the turret.





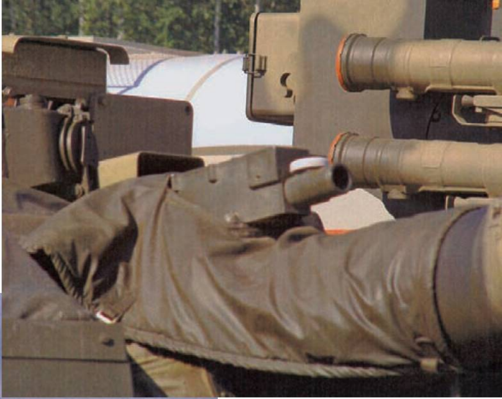


ABOVE: A close up of the muzzle reference system receiver mirror and mount on the tip of the 2A46M-5 barrel. (Courtesy NGIC)

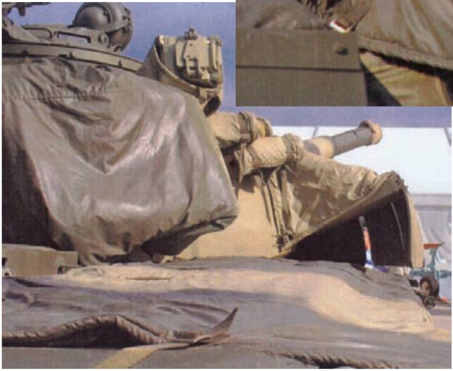
RIGHT: The driver-mechanic's hatch area of 'Rogatka.' The regular viewer and the periscope head for his night viewer can both be clearly seen at the lower right side of the photo. Also the thickness of the 'flaps' over the front of the 'Relikt' armour array can be seen. (Courtesy NGIC) to buying 300 new tanks a year for 20 years which is seen as unrealistic in the face of stiff parliamentary opposition. The numbers are too small to permit a modern force structure, and the time taken would result in having to scrap the first 300 tanks before the last 300 got into service.

The solution being pursued is upgrading the best of the tanks on hand to contemporary levels of protection, firepower and mobility. All of this is seen as costing only about one-fourth of a new tank, and is something that the *Duma* has shown itself to be more receptive to funding.

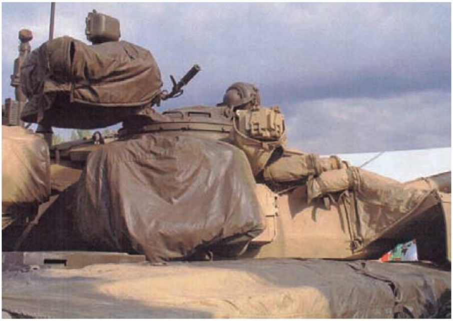
An improved T-80 has been shown for several years – the T-80UM-1 'Bars' tank – as have several different versions of an improved T-72M1 Modified tank. However, both have faced no sales and little interest. It seems most of the Russian Army are not happy with the T-80 series tanks as they are very expensive to operate and fuel 'hogs' due to their thirsty turbine engines. The more fuel-efficient diesel powered T-80UD was a Ukrainian design so was not appreciated either, and its 6TDF engine is better suited for hot climates anyway. That leaves the T-72 family.



ABOVE: The MRS receiver/sender unit mounted above the mantlet for the gun. The small white disk is the protective cover for the MRS sender when not in use, nice of the Russians to provide a built-in storage spot for it. (Courtesy NGIC)



ABOVE: The right rear side of the turret showing that even the 'Tucha' smoke mortars get their own little 'Nakidka' blankets. The undershot mounting of the 'Relikt' module sections can also be seen here. (Courtesy NGIC)
BELOW: Another view of the right side, but here focusing on the TShU-1-1 coarse laser designator warning receiver heads in the centre of the photo. They are closed here. (Courtesy NGIC)

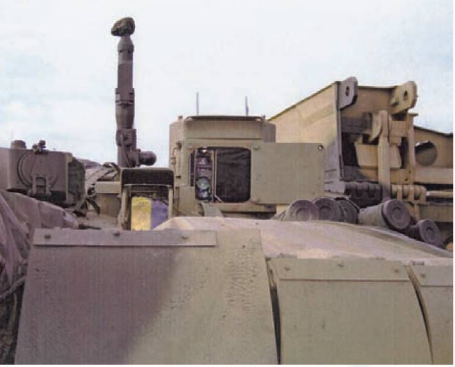


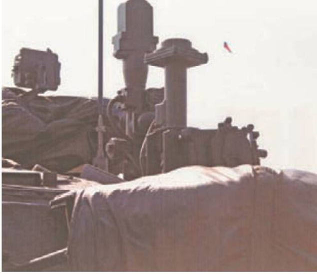
What was not noticed at the time of its introduction was the fact that in one of the first Nizhniy Tagil exhibitions in 2002 the Russians showed two modified T-72M1 tanks. One, dubbed the T-72M1M, was fitted with 'Kontakt-5' reactive armour and the 'Arena' active defence system, which projects mine-like munitions from the tank to shoot down ATGMs in midair. Behind it was the 'T-72M1 Modified' which was fitted with the 'Sosna-U' fire control system, the prototype array of 'Relikt' reactive armour protection, and the universal RMSh tracks, which are among the major features of the 'Rogatka' package. But this tank received little notice at the time.

The proposals have now focused on upgrading the T-72B to modern standards using affordable components and with an eye more to 'local wars and regional conflicts' such as Chechnya or Moldova than the North German Plain scenarios of the Cold War. This entails fixing the problems with the T-72B and upgrading it to stand in the line of fire in such situations.

The T-72B Modified Tank 'Rogatka'

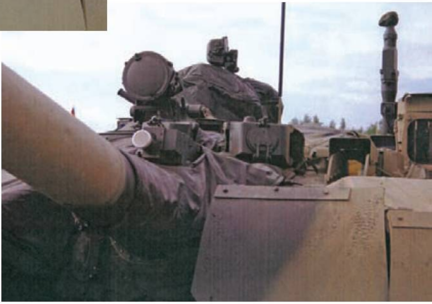
At their annual defence exhibition at Nizhniy Tagil in 2006 the Russians showed their first 'production' modified T-72B tank with the full 'Rogatka' upgrade package in place. The actual designation of the tank has not yet



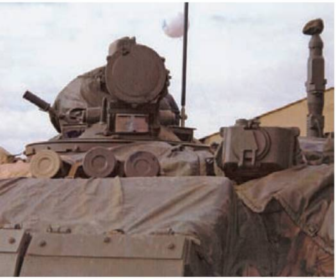


ABOVE: The sensors located on the left rear side of the turret. From front to rear they are the TShU-1-1 coarse laser warning heads, the gyrocompass seeker unit, and the DVE-BS atmospheric sensor mast. The antenna for the R-168 'Akveduk' radio is also seen in this photo. (Courtesy NGIC)

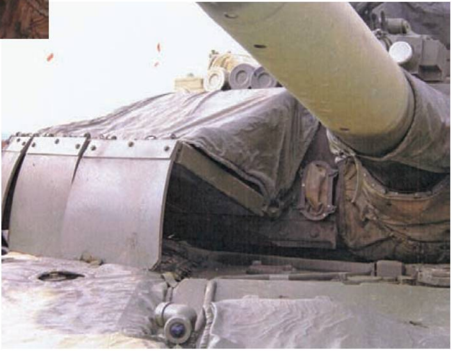
ABOVE: Close-up view of the 'Sosna-U' sight head in its turret. The three distinct windows/lenses can be seen as well as the dual windows in the TPD-K1 sight. The small wire on the right of the 'Sosna-U' is most likely either an air or water line for cleaning the lens cover in combat. Again, note the low elevation of the 'Tucha' smoke grenade mortar tubes on the right side of the photo. (Courtesy NGIC)



ABOVE: Another view of the commander's cupola showing the other TShU-1-11 warning head, the MRS sender, the TPD-K1 sight head, and in the rear the DVE-BS atmospheric sensor mast. The tip of the latter has a cover over it. (Courtesy NGIC)



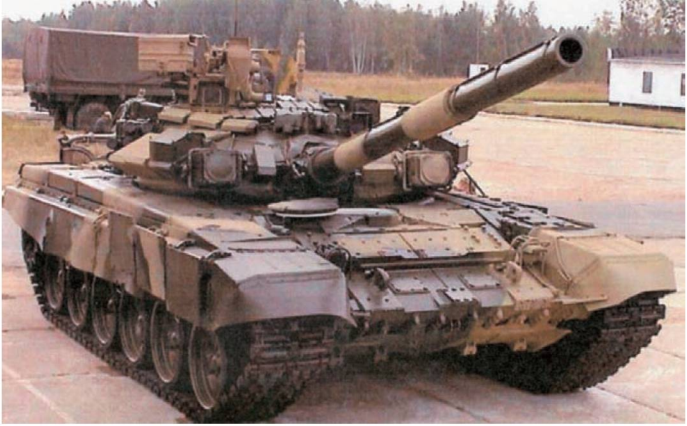
ABOVE: The commander's cupola from head on. It is basically very similar to the regular T-72B commander's cupola and has a manual machine gun mount unlike the T-90 and its T-64 derived remote control mount. Note the TShU-1-11 fine laser designator warning receiver head in the foreground. (Courtesy NGIC)



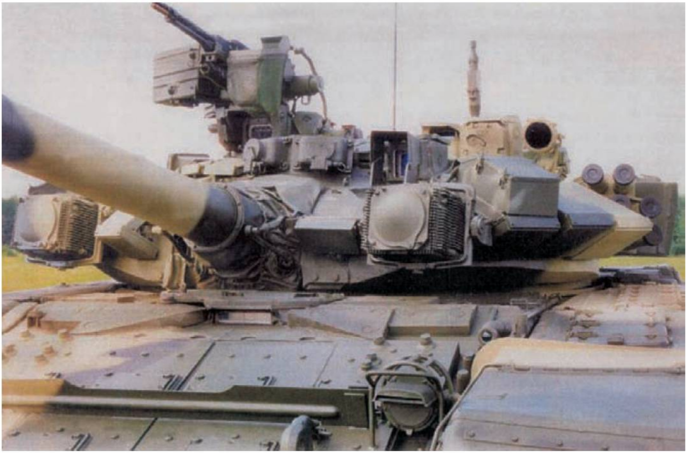
RIGHT: The right side of the turret next to the gun, showing the weather covering over the PKTM machine gun muzzle as well as another view of the 'flaps' fitted to the front of the 'Relikt' armour array. The low angle of the three 'Tucha' smoke mortars can also be seen. (Courtesy NGIC)

been announced: Russian blog sites call it 'T-72B Modified,' 'T-72B Model 2006,' or even 'T-72B2 Rogatka.' Even so, formal support and backing for the tank has come from a number of high-ranking officers and the tank is reportedly going to enter production (actually reconstruction) this year.

The T-72B 'Rogatka' takes the base T-72B and either replaces its outmoded equipment with new items or adds new systems to it to improve its overall capabilities and survival



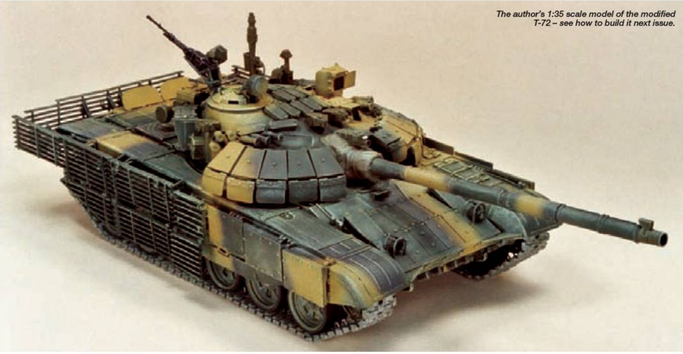
ABOVE: The T-90 Model 1992 tank is quite different in appearance to the T-72B 'Rogatka' and here is a good shot of one for comparison. This tank has the complete 'Shtora-1' package as well as the full 'Kontakt-5' ERA package fitted, as well as the new twin pin 'universal' RMSh tracks. BELOW: A close-up of the turret of the T-90 Model 1992. The gaps left by the 'Shtora-1' searchlight/dazzler arrays and the remote control NVST machine gun can be seen here.



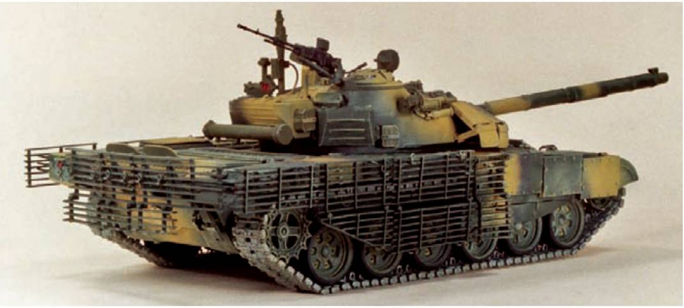
in combat. This latter is not a triviality as with the conversion of the Russian Army from a conscript force to a professional (contract or volunteer) force the tank crews now cost more in both maintenance and investment and are less likely to want to get killed in a death trap. Too many heroism tales end with "…and he was posthumously awarded the Gold Star Medal and the title Hero of the Soviet Union."

'Rogatka' takes the basic hull and turret of the T-72B and retains the best parts. The suspension is upgraded to T-90 standards; the T-90 uses wheels 10mm wider than those of the T-72B and the new 'universal' tracks. Also, the tank receives the more powerful improved version of the V-84MS, the V-92S2, which also uses the heat suppression exhaust system but now produces 1,000 hp.

To ensure that the events of New Year's Eve 1994-95 in Groznyy never occur again,



The author's 1:35 scale model of the modified T-72 – see how to build it next issue.



even though this is a diesel tank it also now has a GTA-18A 18 kilowatt auxiliary power unit at the left rear of the hull. Fuel for this turbine generator is drawn from the fuel tanks on the right fender. This not only provides power for a highly electronic tank but also reduces the heat signature of the tank in ambush positions.

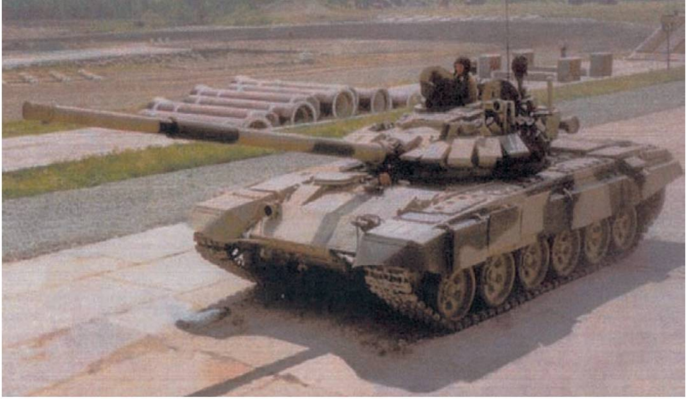
Exchanging the 2A46M gun for a 2A46M-5 gun, with much better stiffness and wear factors has increased firepower. This gun and the nearly identical 2A46M-4 (the -4 is adapted for use on T-80s, the -5 for T-72/T-90 tanks) provide up to 20% better accuracy due to a resistance to barrel whip and a chromed bore reduces wear. Also, this gun is fitted with a muzzle reference system with the mirror on the muzzle and sender/reference sensor mounted on top of the mantlet.

The obsolete 1A40-1 fire control and 1K13-2 missile control sight have been chucked out in favour of the 'Sosna-U' system, a combined Russian/Belarussian/French system that provides for much better capabilities. Designed and integrated by OAO 'Peleng' in Belarus, this sight uses a French CATHERINE thermal matrix from Thomson-CSF with digital electronics to provide targeting at night of up to 3,000 meters and 4 – 5,000 meters in daylight. The gunner and commander have what the Russians call tank information control systems or TIUS which combine sights and diagnostic displays in a single viewer. The TPD-K1 sight is kept as a backup in case of damage or failure to the rather large 'Sosna-U' sight head.

The tank also has an improved version of the DVE-BS atmospheric sensor at the left rear of the turret, which measures wind direction and speed, air density and temperature to ensure the best corrections for shooting. It is also fitted with a gyroscopic seeker for its compass, and other reports indicate that it also has access to GLONASS/NAVSTAR global positioning system satellite navigation information as well as a data system to communicate with other tanks. The gyro seeker head is located between the 'Sosna-U' head and the DVE-BS mast.

The most obvious features of the new tank are its external protection arrays. The tank is fitted with the new 4S23 'Relikt' built-in reactive armour package on the glacis, the turret, and in six to eight panels on the side skirts. These modules hold 'elements' or smaller reactive armour tiles that use explosives and flying plates to break up both cumulative (HEAT) and kinetic (APFSDS) projectiles. There are 394 of them in the 26 to 28 modules and 17 to 19 roof-mounted 'bricks' fixed to the tank.

There are two options cited by UKBTM, the design bureau at the 'Vagonka', for the



The T-72M1 Modified with the 'Rogatka' package is still being offered for retrofitting to T-72M1 tanks, and the 2002 prototype was once more displayed at Nizhniy Tagil in 2006. It now has some changes such as the production arrangement of 'Relikt' on the glacis. The arrangement of the turret roof equipment is slightly different than that which was installed on the T-72B.

'Rogatka' package. One is a 'conventional' or 'large scale war' package in which the tank gets a full 'Relikt' fit with four modules per side skirt and a covering of 'Nakidka' cloth. 'Nakidka' is a multilayered blanket used to suppress the tank's heat and radar signatures; of course, as the factory admits, the first time the reactive armour array is activated so much for the 'Nakidka' coverings!

The other is the 'local wars' package; in this the tank gets a full frontal fit of 'Relikt' but the rear half of the tank and the rear of the hull are fitted with 11 sets of 'Reshyetka' grille armour. This projection, also called 'slat armour,' 'bar armour,' or 'boom shields' by other countries, is designed specifically to stop light antitank weapons such as ATGMs or RPGs. The bars are spaced about 60mm apart (as the diameter of all modern antitank projectiles is at least 73mm or larger) to cause the projectile to either wedge in the bars and stop, deform and therefore not correctly detonate, or detonate beyond optimum distance to harm the tank. The lower sections are hinged and can be held in the 'up' position by push-pins for access or maintenance. However, with the 'Reshyetka' sets in place the rear mounts for 200-litre fuel tanks cannot be used.

The factory dryly notes that you can't use 'Nakidka' and 'Reshyetka' together as the right angles of the grille armour defeat the radar suppression feature of the covering; it also will tear easier due to the sharp angles. (The factory noted that the prototype 'Rogatka' tank is a factory 'mule' and has been fitted with it to get testing of two items done at once – the durability of the 'Nakidka' over 2,000 kilometres of running as well as the 2,000 kilometre run-in testing of the 'Rogatka' package.)

The rather embarrassing assessment of the T-72B 'Rogatka' is that the UVZ has now created a better tank in this upgrade than the T-90s in service – it beats them for protection, mobility and firepower. For example, the 'Kontakt-5' fit of the T-90 provides only six modules on the turret face; the most vulnerable areas are left open due to the presence of the 'blinder' searchlights, which as they are basically hollow, offer zero protection from incoming projectiles. The T-90s that are fitted with thermal viewers, for example, have them added as 'after the fact' – the commander's viewer is between his knees, for example, as there was no other place to put it! The UVZ has admitted that T-90s will have to undergo the same upgrade as the T-72 'Rogatka' to equalize capabilities among the tank park.

Likewise, UVZ has revived its proffered basic 'Rogatka' package upgrade for the T-72M1 series tanks. Since there are more likely more of these in the hands of foreign customers, if the 'Rogatka' upgrade works out and is reasonably priced (e.g. around US $1 million each or less) they may now gain substantial sales to former Soviet customers.

At the time of writing there is at least one full-scale production prototype of each tank – the T-72B 'Rogatka' Model 2006 and the T-72M1 'Rogatka' Model 2002 – running at Nizhniy Tagil. ■

Concluded next issue

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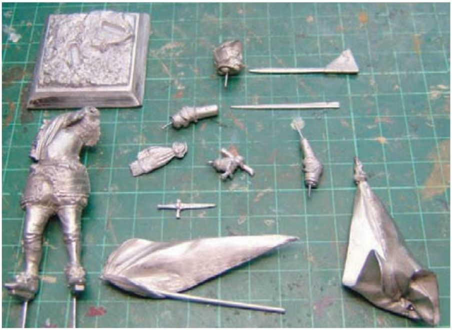
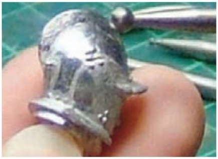
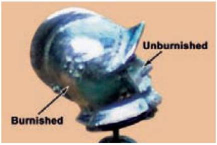


Parts of the unassembled figure just out of the box – laid out on the work surface.



Burnishing the helmet with a ball ended tool.



Remember; burnish only those areas that are metallic like the helmet, but not the facial or clothed areas.

Plate and Mail Armour

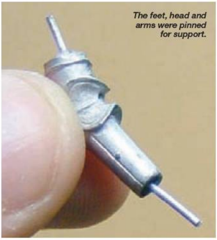
Stephen Mallia shows how he gets a realistic metallic finish on his white metal figures

This short article is intended to deal with one particular aspect of miniature figures and will not cover the entire process of this model figure in question, but will show how I treat mail and plate armour on my white metal figure models. It is important to note that this is *specifically for white metal figures*, since the approach for resin or plastic figures is totally different. Also this is my method and not *the* method, since there are quite a few other ways to handle the procedure.

For this particular article I chose a figure by Elite Miniatures, the Alfarez de Santiago, Malta 1565, for the sole reason that it incorporates both mail and plate armours.

Cleaning and preparation

The cleaning process is quite normal. As usual it's done with needle files, abrasive paper and steel wool. The steel wool polishing will make any imperfections stand out and subsequently they can be corrected. With steel wool polishing completed, I give the figure a good wash with some soap and water. If you want to prime the non-metallic parts, now is the time! Products like Maskol or even Blu Tack can be used to mask off all the areas scheduled to receive treatment.



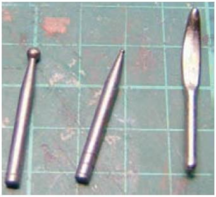
The feet, head and arms were pinned for support.

After the primer has been applied and thoroughly dry any masking should be removed. Now the fun begins! Steel burnishing tools of various sizes are used to ensure the whole area is burnished and given a polished and shiny look. While this is fine for now it is totally incorrect and inappropriate for the end result.

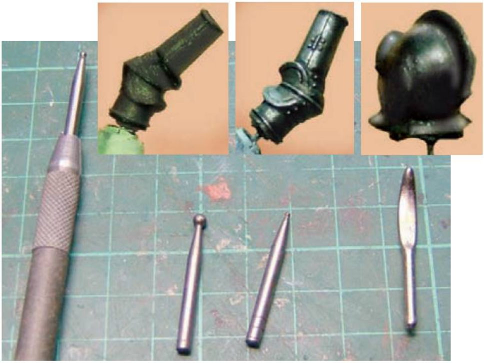
A mix of Ivory Black and Burnt Umber oil paint is prepared in approximately equal parts. This is applied with an old or used brush in a random manner, making doubly sure to cover all areas, especially in all the nooks and crannies. This coat is left on for about 5 minutes or even less depending on how dark you want the stain. The longer you leave the coat on, the darker the stain will be.

With a piece of tissue paper, begin removing the oil paint coating. Try not to hold the figure or parts of it with your fingers, but keep them firmly between the tissues to avoid leaving any fingerprints on the metal, and rub the oil paint off the metal surface. A word of warning here! This step is messy, so have a pile of paper tissues at hand, because you will need them. Also, if possible, have all the parts fixed to handles, like toothpicks, or wires fitted into pin vices, or something similar, that should eradicate any messy problems that crop up. Try to work on one area at a time, but make sure you leave the oil paint on each part for the same time to produce and even stain overall.

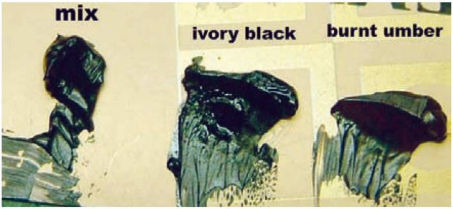
Now examine all the parts and go over the areas where you usually outline with dark paint. With the oil paint and a fine brush. Outline these and, with a DRY clean brush, feather the freshly applied paint. You're nearly there! Put the treated parts in the crock pot (or whatever method you use to speed



Some of the tools I use to burnish white metal.



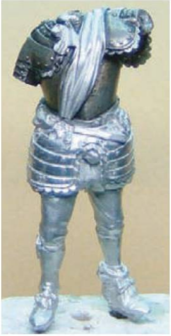
INSET ABOVE: Oil mix applied on helmet and plate armour on the arm. The oil paint has been removed from the arm. BELOW: My oil paint mix – it all looks very dark but does the trick!



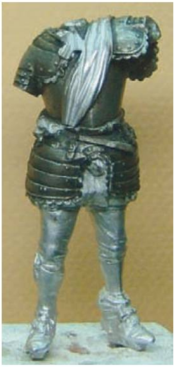
up the drying of oil paint) for a few hours to make sure the oil paint is completely dry before going any further.

When the paint is dry apply some highlights with some silver paint along the edges, but be careful not to overdo this. Some rust and wear and tear can be applied now, for which I use some Burnt Sienna oil paint and apply dots on strategic areas like armpits, etc. Again, with a clean dry brush, feather this to simulate rust stains and that should be it.

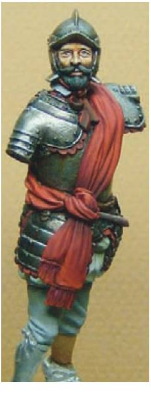
I hope this article will help improve this technical area of your figure painting. Keep your brushes wet for the next one! ■

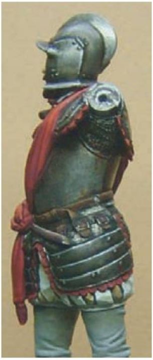


The oil paint has been removed from the upper part of the figure leaving a stain. Note the difference from the lower, yet to be treated areas.



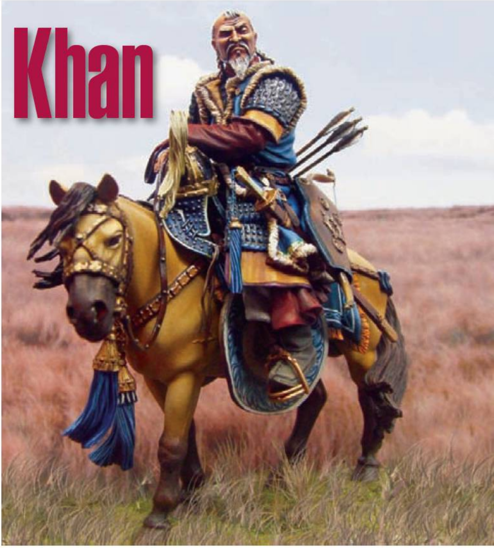
The lower area with the oil paint removed.





The finished areas of armour on the figure with highlights and rust added.

Genghis Khan



Adrian Hopwood assembles and paints one of Pegaso's big 90mm mounted white metal figure kits

When Pegaso released this model, several years ago, I was really tempted to buy it. The problem was the expense, compared to how much spare cash I had - well, there just never seemed to be a 'right time' to get it. Not only that, very few appeared on the show bench, but all the ones I did see were painted very well, and the intricate patterns kind of put me off.

Early in 2007 though a fellow convinced me that I wanted to paint this for him as a commission, and to be honest, I was a bit nervous at taking the job on. One of the reasons, regardless of the complex paint job, is the complexity of the kit – the parts are laid out in **Photo 1** and as you can see, there are rather a lot of them!

Considering the age of the kit; the sculpting finesse stands up well against present day offerings – a compliment to Victor Konnov who made the master model for this piece. In fact, parts are very well rendered, and that face… Well, it really is a little gem.

Because this is rather a complex model, I won't give a blow-by-blow account of how it was painted, but instead focus on a few points that might make things easier for you if and when you paint similar pieces yourself.

For instance, **Photo 2** shows the basic colours added to the pony. I used a very pale flesh tone for the undercoat, and then used just four colours to paint the main areas of the horse; these being Raw Umber, Mars Brown, Mars Yellow, and Titanium White.

The predominant colour of the horse is made up from Mars Yellow (four parts), with additions of the other three colours (one part of each). The shadows are added with more of the Raw Umber, and the highlights by adding more Titanium White to the main mix, and then topping off with more of the white added directly to the model and blended in with a soft brush. By using a large, soft brush for all the blending, I managed to make a slight texture to the surface of the paint, thus hinting at the animal's winter coat. The paint was allowed to dry fully before moving on with any further additions, but meanwhile I wanted to start on the patterned areas of the saddle.

The main part here is a large disc on each side that hangs down level, or just below level with the boots of the figure. Having looked very closely at some pictures of highly detailed paintings from last year's Euro Militaire, I though I might have some idea how the painters of those pieces may have gone about getting a very highly-detailed painting on an area that was relatively flat, but still rather small.

What I did was to scan a suitable design into my computer, then reduce it in size using Adobe Photoshop. This was then printed out onto some very thin paper. Having got this far, it was a case of fastening the design onto the model. And that all looked rather poor! Well, to me it did, but this was only the first step of the process.

Photo 3 shows the design in place, and as you can see, the print quality is not very good; the lines from the print head can be seen, and if this gets wet, the inks will run. Added to that (what, there's even more you ask?) Yes, the print colour will fade quickly too! But as I said, it's only half the job and now comes the skill.

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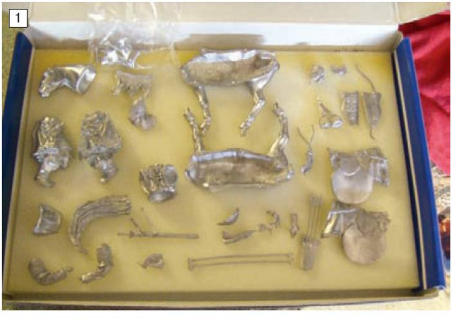

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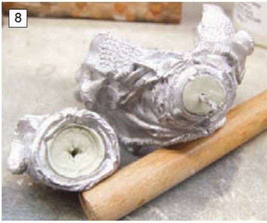

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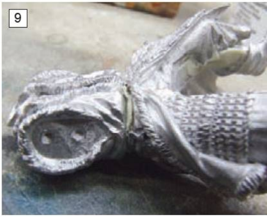

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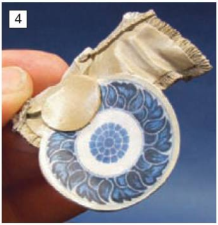

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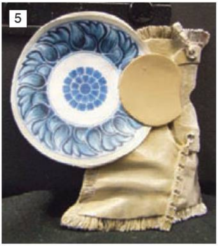

All that fine detail has to be painted over, with all the colours added and enhanced to give the different patterns, plus give the design longevity if it's placed in daylight for any length of time. I used oil paints to paint all this, choosing Prussian Blue and Titanium White (and mixes of these two), applying them with a very fine brush and a small amount of white spirit. The other problem incidentally is that the paper will absorb the thinners, so I felt it best to add a coat of varnish to the paper prior to adding any paint.

Photo 4 shows the outer ring of the design painted with the mid-tone and the shadows and outlines. **Photo 5** shows the left half of the outer circle after being treated with highlights and the cutting back of the outlines. **Photo 6** allows you to see the original printed version on the left, and the one on the right - which has had the outer ring design completed. Both of the discs have been completed in **Photo 7**, although an outer border will be added later.

Back to construction

Probably noteworthy here is how to join a mounted figure together so that it will have the maximum strength. In **Photo 8** is shown the upper and lower torso of the figure. Each of the hollows has been filled with Milliput, and a wire inserted in the lower torso. This wire goes through a hole that I drilled through the crotch of the figure, and will eventually seat into a hole drilled into the back of the pony. When the two halves of the figure are joined, I'll add a thin sausage of Magic Sculpt to the outer edge of the joint, all the way around, and as the two parts are forced together, this putty will squeeze out of the closing joint (**Photo 9**). This putty will provide filler for any gaps that are left. Any excess putty can be cleaned off with a sculpting tool.

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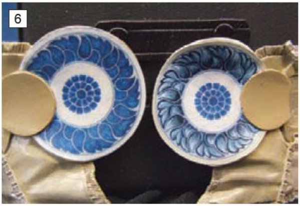

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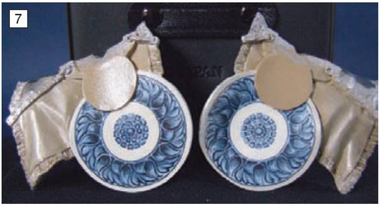

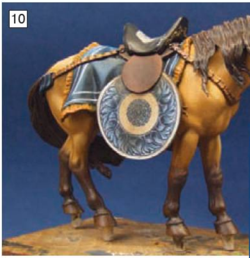
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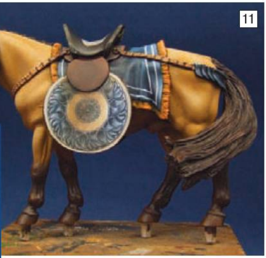
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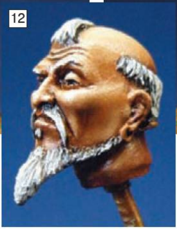
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Final assembly and painting

Photos 10 and **11** show the saddle added to the pony. I dried the saddle fully after painting, and then added some Payne's Grey and Mars Brown paint to make it look scuffed and grubby. Also, in this shot, is the beginning of the design on the saddlecloth, plus the other areas of the pony that have been painted. The mane and the tail have been glued into place, filler added where necessary, and then painted.

The muzzle and the lower legs have been painted with a very dark brown (Mars Black and Mars Brown mixed in equal parts), the paint being added to about half way up the shins (in the case of the legs) and then a soft brush used to stipple the paint and make it travel further up the legs whilst blending it into the lighter paint that is already dry. The same method was used on the muzzle.

In the next shot (**Photo 12**) I've completed the face. The usual mix of Winsor & Newton Flesh tint, Mars Yellow and Titanium White have been used, but with slightly more of the yellow to hint at an Eastern complexion. The

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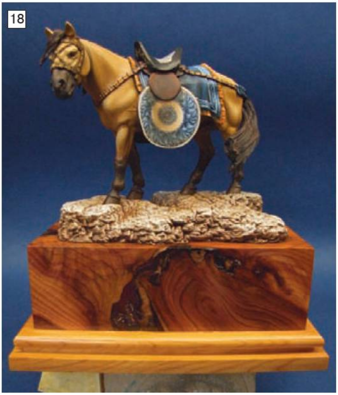

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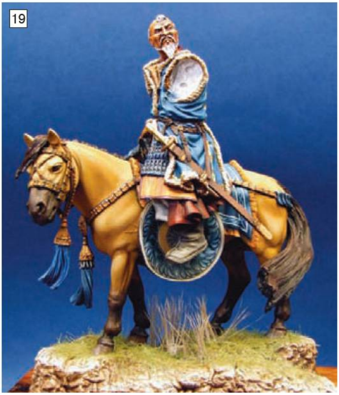

paint is still wet when this photo was taken, hence the light catching the gloss surface of the paint and reflecting it back at the camera.

Photo 13 reveals the main parts of the figure being painted. I began by working up from the boots, because the clothing overlaps on the figure in the manner of slates on a roof, the lower articles of clothing being covered by ones further up the figure. I was still in the process of deciding how or what pattern to add to the coat at this stage. I didn't want something too ostentatious, as he's supposed to be on campaign, and I think Genghis would have reserved his most gaudy clothes for holding court in his tent.

The arrows and the bow in its case (**Photo 14.**) The arrows have been painted in the style of those used by wealthy Samurai – where the shafts of the arrows would be cut and fletched in such a manner that when place in a holder, the leaf scars matched. Very expensive in its day as, after all, these were a disposable item, but it hints again at this man's wealth. The handy thing about the bow case is that it comes in two pieces; one with the back of the case and the bow, whereas the other is just the front of the case. This allows the modeller to add a bowstring, I used some very fine electrical wire, and to make the bow look separate, because there is a very small gap between the bow and the front piece of the case. I painted both the cases to look like leather items, and bearing in mind that they would have seen a lot of use, and were functional items, I added scratches and scarring to the leather areas. The blue edging is there to tie them to the colours of the rest of the model.

Photo 15 shows a front view of the figure's main castings and again it shows that I've worked from the lower areas inside, to the outer areas at the top; the exception here being the armour, which I was about to add with acrylic colours. Moving around to the back of the same parts, in **Photo 16**, I've added thin braiding decorations to the model. These are completely hand painted, and I got the idea from some pictures of present day nomads, photographed wearing traditional costume. I liked the minimalist approach to the decoration.

I mentioned how I painted the bow and arrow cases, and **Photo 17** shows a block of wood that I use for holding smaller components whilst they're painted. I find Blu Tack invaluable for fastening them down temporarily, the trick being to paint the backs of each part with a dark colour acrylic (allowing it dry fully) then place them like this to paint the visible portions. If both sides of an object are to be on show, then I can paint one side, let it dry fully, then flip it over and do the other side – the Blu Tack will not affect the paint if it's applied over a good primer coat.

As I neared completion, I added the pony to the groundwork. This isn't the rather gory groundwork that comes with the kit, because the chap who asked me to paint the kit specified he didn't really like it. My base is some home made groundwork, constructed from a mound of Milliput (I should have bought shares in that company!) and textured with a small stone. The pony was put in place only temporarily, to give some idea how it would look once finished. I added some static grass and deer hair before fastening it permanently in place.

I also really liked the wood plinth that I got from Dave Armstrong at Armstrong Bases to display this model on. It's a very nice piece of wood and the grain is absolutely lovely. Shame to put a model on the bases he supplies…sometimes!

Photo 19 illustrates the addition of the main figure castings to the pony. The arms were added shortly after this photo was taken, along with the weapons and the reins, and really that was it more or less finished.

The remaining shots show the finished model, although I do like the photo with the scenic background. Genghis and his hordes didn't quite make it into northern England fortunately, but he doesn't look too out of place with a background picture of the moors between Lancaster and Clitheroe, taken last winter.

Final words

It took me a long time to get the chance to paint this figure, and even then, it seemed to stay on the workbench for quite some time. It's certainly not a piece for the faint hearted, although there are things you can do to cut corners with the flat areas, as far as complex designs go at least. The whole thing is a balance between giving a very colourful, almost clashing paint scheme, or erring on the functional and duller colours that would probably have been the choice for regular use.

As I've already mentioned, this Pegaso kit certainly stands up well to the standards set by current kits, and is something that could occupy the modeller for quite a lengthy period. My thanks to Ian Johnson for letting me loose on this one, from what he's said, I think he's pleased with the results.

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ISBN 1-86019-407-9.
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The Mongols (Osprey MAA 105) S.R. Turnbull & Angus McBride.
The Grammar of Chinese Ornament.
Owen Jones. ISBN 1-85585-383-3.

Availability

Pegaso's Genghis Khan (90-905) is available in the UK and worldwide via mail order, price £166.10 plus £5.25 p&p from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ.
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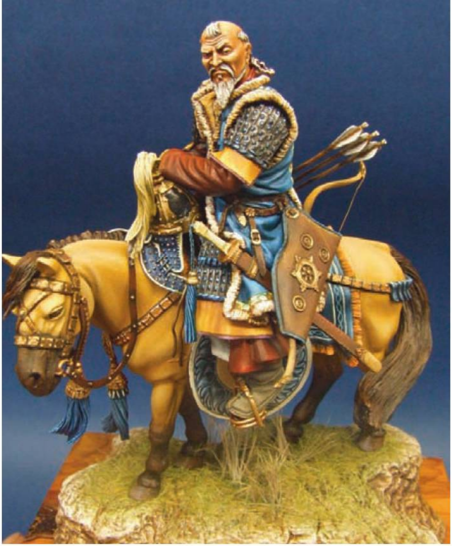

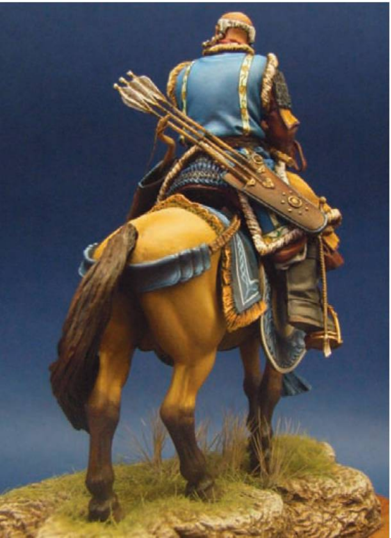

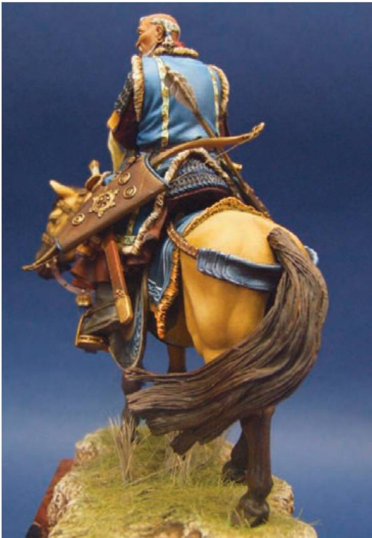

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ARMY WHEELS IN DETAIL
HUMBER MK.I, II SCOUT CAR

Army Wheels in Detail AW02 Humber Mark I, II Scout Car, Petr Projo. Capricorn Publications, Zeniskova 2124/8, 149 00 Prague 4, Czech Republic. ISBN 978-80-903945-0-6 UK price £9.99, €12.90 + p & p from www.skpmodel.eu

With very little in print on British wheeled armour, this book will be welcomed by anyone interested in the subject and especially those wanting to model a Humber Scout Car. Basically a photo survey, it begins with brief background details including original serial numbers and the changes made during production. A short section has photos of Humbers serving with the Czechoslovak Independent Armoured Brigade in NW Europe 1944-45 and on their return home on parade in Prague; counting the photos on the covers this gives 16 period black and white images. Most of the photos are colour shots of the vehicle at Czech Army Technical Museum at Lesany. Thus had an interesting and unusual career in civilian hands, which is briefly related. Photos show the car from all angles outside, underneath, in the stowage bins and inside the crew and engine compartments. They are clearly printed with captions telling what they are and adding extra information. Drawings from the original vehicle Handbook are interspersed among these showing chassis, axles, wheels, controls, engine, the PLM mounting for the machine gun and views of the crew compartment from front and rear to show the original layout. Other drawings are a set of 1:35 scale plans showing five views plus a side cutaway and colour views of seven vehicles in service with fairly vague descriptions of the non-Czech units.

A lot of detail is included here, which will be ideal for modellers to add extra detail. My copy came via Ian Hanratty but the book can be obtained from mail order booksellers including Aviation Book Centre or from SKP who produce one of the kits of this car. Very useful, this one comes recommended.

Peter Brown

Toadman's Light Tank M24 Photo Detail CD No.19. www.toadmanstankpictures.com

TOADMAN'S LIGHT TANK
M24 PHOTO DETAIL CD

The M24 Chaffee was the final design of American light tank of WW2. It was totally different from the previous M2, M3 and M5 series, which had been built before. Its torsion bar suspension made it look far more modern while a new 75mm gun greatly increased its firepower. Its one drawback could be that it came into service late in the war, only reaching the front line at the end of 1944. Post-war it served in American Army hands into the 1950s including action in Korea, with many being passed on to friendly countries where they were in use for many more years. Anyone who has already bought one of Toadman's discs will know what to expect. As with the others, this is a photographic survey of the tank using photos of several different machines in collections in the USA. When put into the drive on a Windows PC, the disc loads automatically to show a start menu leading to a table of contents. Mac users have to follow a simple procedure for which directions are included. A short introduction gives basic details on the vehicle and lists books for those wanting to study the background and history of the M24 in greater depth. Each of over 280 photos has its own 'page' containing a caption which points out specific features, this has links to go to next or previous images, often with links related views as appropriate or a different section. Useful facts are given at various points. These include armour thicknesses, the different styles of main gun barrel and why they were different and what the instrument panel dials showed.

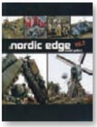
Coverage is split up into logical sections. There is a series of general views, then sets of photos of the outside of the turret and exterior of the hull, suspension then inside turret, hull and engine compartment. The exterior series give good views of the real appearance of cast parts and weld seams, and highlights differences between wartime vehicles and post-war ones in areas like the 2in smoke mortar or antenna mounting, spare track link stowage and adapter brackets for the fording equipment. Both the all-steel wartime and later rubber block tracks can be seen. Details that are not apparent, including the hold-open device for the hull crew hatches are pointed out. Most items are shown from several angles, which allows good coverage of features like how the various lightening holes in the sprockets and idlers are laid out. Even the inner faces of the roadwheels can be seen, along with details of the underside. Inside coverage is just as comprehensive with photos of all manner of nooks and crannies. Crew seats are shown up and down where appropriate, along with various equipment such as radios, controls and the many and varied stowage boxes, bins and clips.

Very few people will have good enough access to a surviving tank to be able to take photos like this. Even if they have, the number and quality of those on the disc mean that there is little point. For the majority of us, this is a more than acceptable alternative to seeing the real vehicle. As a source of information for modelling a Chaffee it is hard to beat, although other sources may be needed for colours, markings and what the tank looked like in service.

Many thanks to Chris Hughes who 'is' Toadman for sending a copy for review. Like all discs in this series, this is both very good and great value. While there are few retail outlets, it can be bought direct online from www.toadmanstankpictures.com for US$7.99 plus US$2.25 postage and packing to anywhere in the world. Payment using PayPal makes online purchase easy enough. Chris provides a first class service and like all his products this one comes highly recommended.

Peter Brown

The Nordic Edge Model Gallery Vol.2, edited by Toni Canfora. Canfora Grafisk Form & Förlag, Byggmästarvägen 7, 168 32 Bromma, Sweden. info@canfora.se www.canfora.se ISBN 978-91-976773-1-8. Price UK £21.85 + £2.95 p&p (Historex Agents)



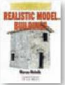
This second volume of Nordic Edge is much like the first successful volume and presents an excellent mix of features by Scandinavian modellers, Per Olav Lund, Markus Eriksson, Ulf Blomgren, Magnus Fagerberg, Johan Fohlin, Andreas Bennwik, Pekka Nieminen, Lars Bränström, Mirko Bayerl, Toni Canfora, Øyvind Leonsen and Anders Isaksson. Some of the models will be familiar to anyone who has read our Issue 14 - Euro Militaire Special.

The book is divided into 'Dioramas and Vignettes', a 'Figures Gallery', a Historical Article' on 'Husarenstreich, Hungary 1945 - The Attack on Stuhlweissenburg' (Mirko Bayerl) and a 'Vehicle Gallery' featuring articles on particular vehicles accompanied by a background story.

The text is English, so the book has an international appeal. It is well-produced and features lots of large colour photographs of the models, plus black and white reference pictures from The Second World War. I was pleased to see one of my favourite (and unsung) models from the last Euro Militaire therein - 'A Taste of Home' by Markus Eriksson that depicts an American Red Cross Club Mobile vehicle and additionally, nine individually naturally posed and well-modelled figures that includes the lady operating the vehicle for the troops. Highly recommended, it's all good stuff and our review sample came from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528. sales@historex-agents.co.uk www.historexagents.com

Ken Jones

Realistic Model Buildings, Marcus Nicholls. Compendium Films www.compendiumfilms.com £14.99 ($24.95 USA)



In the first of two new DVDs in the 'Expert Model Craft' series from Compendium Films Marcus Nicholls shows the methods and techniques he uses for model buildings. Essentially what is presented involves the finishing of commercially available kits.

As usual the DVD after the introduction by Richard Windrow is broken down into 'Chapters' that feature the various subjects covered by the presenter and this one begins with 'European Brick' using a Great North

Roads' 'City House Ruin' to demonstrate on. Mortar colour is sprayed on followed by 'red' brick dry-brushed on the ruined cast plaster façade. Good use of the Iwata airbrush and paintbrushes is shown, for spraying and dry-brushing mortar courses and bricks. Weathering with the airbrush and then pastels, wet and dry completes the exercise. An alternative method is included in 'Extras' and in total reverse to the first method, adds the brick colour first and then pigments for the mortar. I think I like this method better, so don't miss it and retrieve it from 'Extras' to watch it straight after the first method and then judge for yourself. Throughout Marcus shows the old trick of how good use of a hairdryer to speed up the drying process of paint can save lots of time for the busy modeller… but watch those heat settings on some dryers if polystyrene plastics are part of your building …or nearby.

Stucco effects on buildings, new and weathered, are demonstrated using a 1:35 scale Mini Art Hungarian Country House. It shows how to use Marmite spread as a 'grease' paint resist, later release mask (good idea and a nice smell! If you like Marmite) to show wear and chips on stucco and painted coloured finishes thereon. The effect is very good and shows masking and deft use of the paintbrush on broken brick edges and as Marmite spread is water soluble it comes away without any problems or detriment to the painted finish, unlike using a petroleum jelly like Vaseline that needs a solvent to get rid of it … if you were going to ask what was wrong with using that as a mask.

A Stone Farm House from the Model Victoria range is a cast resin kit – more or less the same as European brick to begin with, but using an airbrush technique to pick out the stones by applying the airbrush's spray flat across the surface in a layering movement. An interesting shadow/shading effect is demonstrated to pick out the detail of the stonework.

Timber Frame Buildings are next and this uses a Mini Art kit of a German 'shed' – which is more like a small farmhouse – that is airbrushed and an oil paint 'stain' applied to the woodwork. This is then masked off and sprayed to finish, literally 'painting' the building with the airbrush, paintbrush and fingertips. This demonstration relies on the box top illustration for finishing the colours.

Modern Concrete and its treatment is made to a plaster kit of a Middle East type block of flats. Some natural looking battle damage (tank shell hit?) is made to the plaster and nicely done as a hit or miss approach with electrician's pliers and bashing it with a file, then chipping and texturing with a steel point – it's plaster and such treatments work well on this medium! The rusty reinforcing steel mat, internal with the concrete, is added from soft solder wire and then highlighting and shading applied with airbrush, as is weathering the model… with special attention to the damaged areas. 'Extras' shows how to apply a burnt-out effect on the windows of this building, painting and weathering its metal shutters and applying other effects including more realistic damage. Don't overlook the 'Extras' section, it's good, and 'correcting common mistakes' and a profile on Marcus Nicholls also features therein.

The DVD has an index with 'key words' for easy location plus a list of 'Extras' and a products list. It's easy to navigate and find any particular sequence throughout. However, the lip synch is 'out' in some areas on this DVD – and I fear that Marcus looks like he's talking to a Webcam video link at times. Also, Marcus changes his appearance in clothing and facial hair throughout, showing the long period over which these modelling DVDs are filmed. Overall rating – very good! It's both practical and informative and it must be stressed is not only for beginners, and everyone and anyone can learn something from it.

It seems a conscious decision has been to adopt 'Transatlantic English' on these British produced DVDs – the spellings on screen and DVD cases give, for example, *armor* for armour, *color* for colour, *modeler* for modeller, etc., and while I have absolutely nothing against being separated from our American brothers and sisters by a common language – why, I ask? (I have copied titles, etc., as presented with US spellings.)

Our review sample was supplied by Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528.
sales@historex-agents.co.uk
www.historexagents.com
Ken Jones

Realistic Armor Finishing Techniques, Marcus Nicholls. Compendium Films
www.compendiumfilms.com
£14.99 ($24.95 USA)

REALISTIC ARMOR FINISHING TECHNIQUES
Marcus Nicholls
COMPENDIUM FILMS

Second 'Expert Model Craft' DVD from Marcus Nicholls, after the Richard Windrow introduction, shows how to get realistic finishes on military vehicles and is divided up into the usual chapters, comprising Colour Washes, Paint Chipping, Rust and Staining, Burnished Metal, On-vehicle Tools and Panzer Grey.

'Colour Washes' (called 'filters' by some!) demonstrates these simple techniques using oil paints thinned down with white spirit on a Tamiya T-55 – resulting in a good 'no frills' demonstration, but one that takes time to properly explain the mixing and application very carefully. Then it's onto applying a second camouflage colour.

'Paint Chipping' (an AFV 'fashion item') is all about how to achieve this effect, perpetrated by military vehicle modellers in recent years, and where I was pleased to see Marcus placed the technique firmly into context by stating 'less is more'. This is a precise technique that needs care to avoid lots of overly spotty, unnatural looking vehicles.

'Rust and Staining' shows how oil and other stains using oil paints and acrylics, can be realistically depicted whilst describing the advantages of each. This sequence, I thought, would have benefited from more, closer in close-ups of the brush bristles doing the job, rather than the camera observing from the same distance and viewpoint. A very good demo on these sequence, however. Rust staining on the T-55's external fuel tanks is illustrated – but once again a closer-in look would have improved the sequence. Extensive work on the T-55's big exhaust outlet is made, plus rust streaks and the big sooty black hole of the outlet.

'Burnished Metal' using a graphite pencil to represent base metal and then shined up with a brush in a motor tool where surfaces get burnished through natural wear is appealing – a good technique for plate armour on figures too!

'On-vehicle Tools' looks at an assembled and painted Tamiya Tiger I kit so the clamped on tools can get a makeover, using shades of paint for wood and metals. Again, the camera isn't getting in close enough to see the effects to advantage or in better detail.

Finally 'German Panzer Gray' (shown as 'Grey' in the on screen title), follows the sequence of airbrushing panzer grey onto a flat surface, then highlighting and shading it for a subtle and visually realistic effect. Here, the camera does get in close enough to see the effects take place 'before your very eyes' as a certain comedian used to say. This goes into dry brushing and applying rust stains on the surface. The second technique on the same subject, however, shows extreme weathering of panzer grey follows with flat earth colours in a reverse shading effect and rust streaks.

Without stating the obvious, please note that if you wish to reproduce rust stains by the techniques shown in the DVD on your model, and if it's a modern AFV, first check if it has aluminium armour, or there are any aluminium parts on it – aluminium don't rust!

This DVD gives what it says on the tin – it's an excellent primer into model vehicle finishing. Marcus excels at finishing model vehicles and his methods are adequately described and illustrated and do form ideal examples to follow, especially by younger modellers just starting out, or by more experienced modellers who would like to improve or change finishing techniques. I rate it very highly as an instructional DVD – but with a few reservations on the lack of close-ups on some of the fine and detailed sequences.

Additional techniques are given along with correcting common mistakes plus a 'Model Panorama' that displays some of Marcus's models. A profile of Marcus Nicholls (different to the one on the 'Buildings' DVD) is featured and I was especially interested in the period where he mentions how ***Military Modelling*** magazine figured in his career *- obviously for accuracy of course!*

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Ken Jones

Please note that Jochen Vollert Publishing changed their address in 2007 to: Verlag Jochen Vollert Tankograd Publishing Am Weichselgarten 5 91058 Erlangen Germany.

Atten-Shun!

The Product Review Column

● The Editor welcomes product samples for review. Unless a prior arrangement has been made with the Editor review samples WILL NOT be returned.

All product samples intended for review in the 'Atten-Shun!' column should be sent to:

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RUSSIAN HEAVY TANK JS-2 MODEL 1944 ChKZ
432
TAMIYA

Just Arrived!

Tamiya

As we went to press for this issue we received an advance sample of Tamiya's new 1:35 scale injection moulded plastic kit for the Soviet Heavy Tank IS-2 (also JS-2), kit no.35289.

It's good to see Tamiya producing another 1:35 scale kit after their two-year sojourn with 1:48 scale, which it seems wasn't/isn't as popular as they had hoped, though one or two manufacturers aped them and also produced 1:48 scale kits. The new IS-2 kit looks very good from the brief 'box rattler' we gave it before placing it into the hands of Steve Zaloga who has some ideas for putting it into a diorama.

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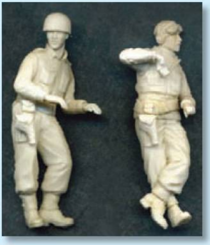

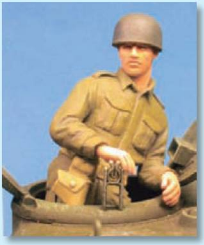

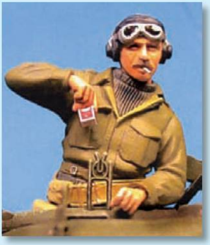

Ultracast

A pair of new 1:35 scale figure kits of tank crewmen that can represent either British or Canadian armies for Italy or Northern Europe 1942 - 45 have been sent to us for review by Ultracast of Canada. Also sent were some 1:35 scale British pattern jerrycans of the Second World War period. These were designed from an original in the possession of Kevin McLaughlin of Ultracast. As an aside, the Allies made more or less direct copies of captured German canisters and gave a new word to the English language – jerrycan! German = a 'jerry' + can. You can find the word 'jerrycan' (also *jerrican*) in the *Oxford Dictionary of English*. However, I digress!

The figures were designed by Peter Morton and intended to fit into hatchways, cupolas or they could be posed to lean against a vehicle or structure, the figures are cast in polyurethane resin and show both sharp and subtle detail where required. Upper and lower torsos are single castings with heads, arms and pistol holsters to add.

One figure's head wears the tank crew steel, brimless helmet (35047) and the other a beret with goggles and earphones, (35048) which more or less epitomizes the appearance of Second World War British and Commonwealth tank crews where the black beret eventually became more or less universal, even amongst cavalry regiments who originally stuck to wearing their side, or field, caps - some of which could be colourful amongst all the drab Khaki colours.

The figures are attached by the feet to large resin blocks, as are arms and heads, for moulding purposes and these need careful removal. Price of each figure is CDN$7.95 plus CDN$7.50 shipping and handling charges on orders.

The British pattern jerrycans, five to the pack, (135015) are CDN$7.95 plus CDN$7.50 shipping and handling.

Ken Jones

Prices in text

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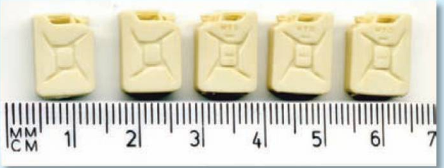
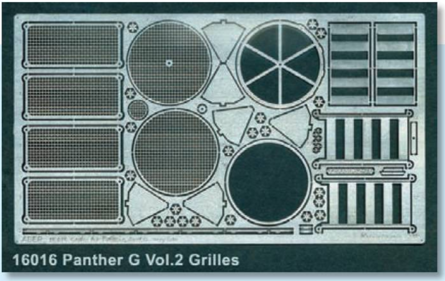
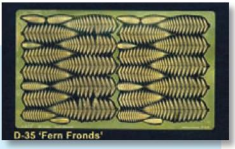




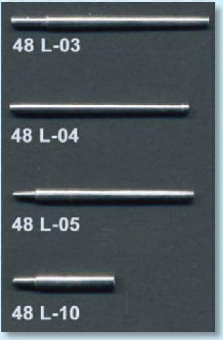


ABER

ABER release new photo etched brass frets to update available vehicle kits in most popular scales and their latest batch they've sent to us has 1:48, 1:35 and 1:16 scale items, plus three types of engraved non skid plate and some 'fern fronds' suitable for any popular scale - or size!

Tamiya's 1:48 scale range has produced a strong response from ABER with: 48032 SU-122 Vol.1 'Basic Set' with fittings and grilles for the SU-122's hull whereas 48033 is Vol.2 with the fenders for this Russian SP gun on the T-34 chassis. Tamiya's Tiger II with Porsche Turret gets a detailing set (48034), as does their Tiger with the production Henschel turret as 48035, with lots of fittings and grilles to lift the kit into super detail status. Both versions of the Tamiya 1:48 scale Tiger II get a full set of side skirts and fenders to complete the task in set 48036.

A single 1:35 scale accessory is 35106 that has lots of detailed PE brass fittings for the old Tamiya Ford GPA Amphibious 'jeep'. Quite an extensive set including film parts for the dashboard instrument faces.



Moving up to 1:16 scale Tamiya's Panther Ausf G gets three more detail sets - 161016 Vol.2 Grilles; 16017 Vol.3 Fenders (quite a complicated set this one, with lots of little brass rivets); 16018 Vol.4 provides the side skirts and all of these are photo etched in ABER's 'white brass' - which has a high nickel content and thus appears silver coloured - not yellow brass colour.

The non skid engraved plates have been produced for 1:24/1:25 scales and are: PP18 German WWII type; PP19 Modern type '5x5 Strap'; PP20 Modern type '1x1 strap'. There are plenty of different ideas for this lot! Finally, D-36 is 'Fern Fronds' and suitable for scenic work in most scales.

Replacement turned aluminium barrels (an ABER speciality) for Tamiya 1:48 scale kits are: 48 L-03 US 75mm M3 barrel for the M4 Sherman; 48 L-04 76.2mm F-34 barrel for T-34/76 Model 1941-43; 48 L-05 German *7.5cm PaK 39 L/48 for a Jagdpanzer 38(t) Hetzer*; 48 L-10 Soviet 122mm M-30 for the SU-122 self propelled gun.

ABER products and accessories are available from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528.
sales@historex-agents.co.uk
www.historexagents.com

Ken Jones

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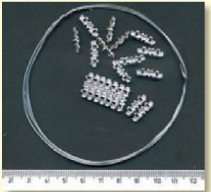

Friulmodel

Friulmodel continue to go down the 1:48 scale route with their cast white metal, fully working replacement tracks and courtesy of Historex Agents, the following have been received for review; ALT-4803 KV-1 & KV-2; ALT-4804 *PzKpfw III & IV* (1943-45); ALT-4805 *PzKpfw III & IV* (1941-1944); ALT-4806 Tiger II, 'Hunting Tiger'; ALT-4808 KV-1 & KV-2 Light Type Tracks; ALT-4809 Panther Early Type Tracks. Plenty here to cover some of the subjects in Tamiya's 1:48 scale range.

The tracks are cast in a white metal alloy as single links and they are handed where necessary, so check carefully to prototype before you begin assembling them. A coil of steel wire is provided for cutting up into lengths as the track pins and threads through holes (which need reaming) on the links, so joining them together. I would suggest deciding upon the length for an individual track pin and, allowing a margin for final fixing with a blob of glue, cut the pins from the wire before even thinking about joining things up. Alternatively use lengths of a more rigid wire (fine brass or steel rod) cut to size.

The tracks are beautifully cast and detailed and the weight of the white metal alloy does make them sag convincingly over top runs. Regarded as too tedious to even contemplate by many modellers, for patient types they do provide the ultimate cosmetic update for a model AFV.

Friulmodel kits are available from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ.
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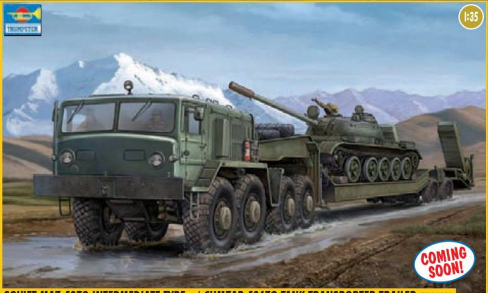

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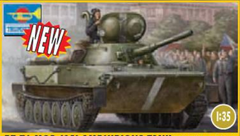

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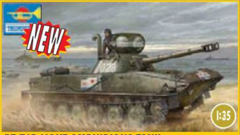

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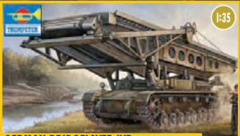

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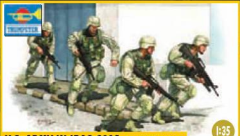

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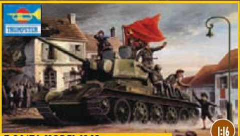

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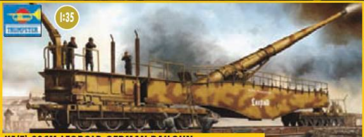

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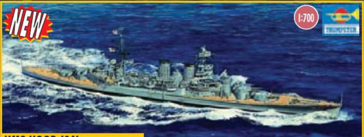

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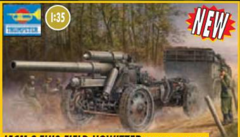

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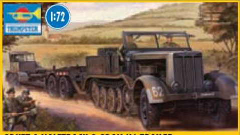

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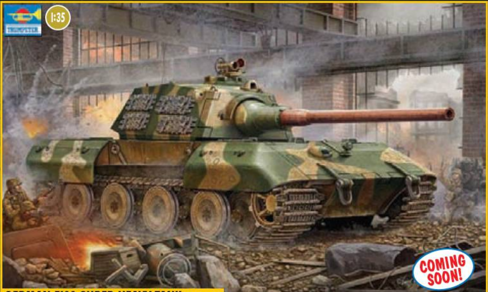

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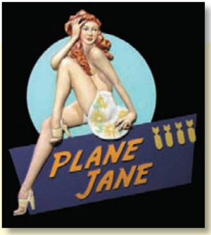

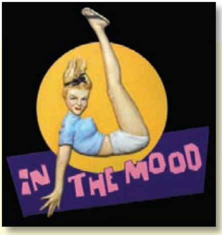

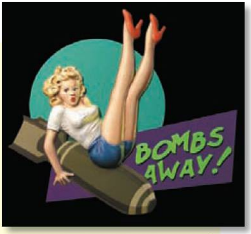

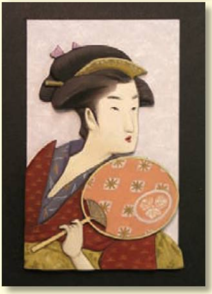

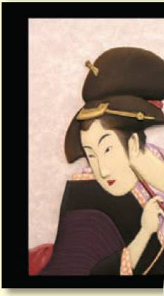

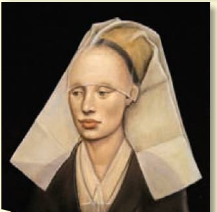

PiLiPiLi

Quang at PiLiPiLi could be said to be going through his 'flat' period as far as design is concerned by turning out some wonderful cast resin 'plaques' of widely differing subjects - he calls them FLATZ.

Featured subjects are American Second World War aircraft nose art and the beginnings of a classical 'Museum Series' with some 'flat' almost semi (*demi?*) *ronde bosse* studies after prints from woodblocks by Japanese artist Kitagawa Utamaro (1753-1806) and paintings by Dutch master Rogier van der Weyden, 1400-1464.

Cast FLATZ are cast in polyurethane resin, and need only basic cleaning up of their peripherals where pips have been left from the moulding process, and then it is straight into the painting stage, although you may prefer to prime the resin to provide a good base for your preferred medium. However, PiLiPiLi resin is a very light grey and thus ideal for painting straight to the surface especially with an airbrush if you decided to give it a try.

A refreshing new idea for larger figures from Quang, and one that should appeal to those who like to paint flats.

PiLiPiLi kits are available in the UK from Historex Agents, Wellington House, 157 Snargate Street, Dover, Kent CT17 9BZ. Tel: 01304 206720. Fax: 01304 204528.

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Ken Jones

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http://www.pilipili-miniatures.com

X-Acto

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MM CM 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

How much thought do you give to you modelling knives? That's if you possess a custom designed knife for modelling - I know some modellers who don't, and it's not such a big deal to many of them either.

I have a mixture of Swann Morton scalpels and X-Acto knives, the former I bought in the UK (first nearly 30 years ago and still going strong) and the latter I bought direct from or on my travels within the USA.

The X-Acto is a good knife and if you haven't got one, I'd recommend you try one of them with its aluminium handle and extra sharp, pointed replaceable blade. A good firm hold and a sharp blade, with a metal straight edge make for accurate cuts.

X-Acto products are now available in the UK from The Airbrush Company, Marlborough Road, Lancing Business Park, Lancing, West Sussex BN15 8UF.
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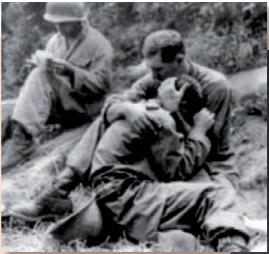

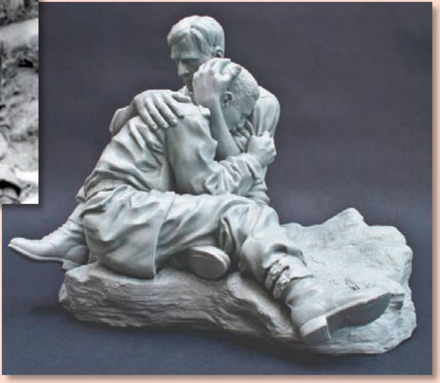

Classicae Artworks

Classicae Artworks is a new company begun by Bill Love, set up by him to manufacture miniature figures. Based in Huddersfield in South Yorkshire, the company's first model is a very impressive 1:9 scale (200mm) sculpture designed by Mark Ricketts, and depicts a touching scene of men in war. The two-figure vignette is based on an original Second World photograph of an American infantry officer comforting one of his young soldiers who has just seen his best friend killed in action. The model follows the scene in the photograph very closely and what will be important for many modellers is that it tells a story. Classicae have given their first creation a title - 'Compassion'. More figure creations are to follow in 2008, the company stating that there will be a further five subjects based on 20th century conflict.

The model is cast in five pieces, in light grey polyurethane resin, that includes the large scenic base onto which the figures locate by large keys that ensure a secure bond. The quality of casting on our sample is very good; detail is precise and what the designer intended has been faithfully reproduced from the moulds. The castings are sharp where they should be, and soft on the clothing to produce the subtle high and low points important to painters for highlighting and shading.

In addition to the standard cast resin kit, the model is also available as a complete sculpture cast in ivory effect resin at £69.99, or in cold cast bronze (powder-filled resin) at £79.99 and this is a useful service for those who like to display finished models and statuettes.

At present, the model is available mail order from Classicae Artwork's Website www.classicae.com that gives postage costs, etc., to purchasers.

The first model from Classicae is an excellent start and a very new and refreshing outlook with regard to subject for a brand new figure producer. I look forward to seeing their next release, noting they have the talented British sculptor Roy Hunt in their team.

We'll see more of 'Compassion' featured in a future edition of ***Military Modelling***.

Ken Jones

Price £64.99 p&p extra

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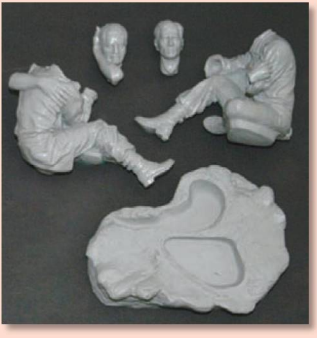

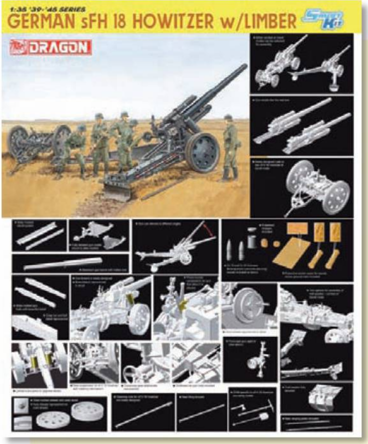

Dragon Models Ltd

In 1995 Peter Brown and I took one of our 'World Tours' to North Devonshire and the Cobbaton Combat Collection, a private military museum. The owner and director, Preston Isaac, met us and proved to be quite a character. Upon introducing myself, his first words were 'I don't like Americans.' A bit crestfallen, I was caught off guard a moment later when he said 'All I have is a Jeep and that ex-ranges Sherman V over there!' Now sorted, we got some tea and coffee and he gave us the grand tour.

One of his pride and joy displays was an ex-Czech OT-810 with a large if unfamiliar artillery piece next to it. It was odd as it looked to be a cross between Czech, Soviet and German designs. When Peter and I gave up, he proudly stated it was a Czech Army deep reserve weapon – a Soviet 152mm D-1 howitzer barrel mated to a German *sFH 18* carriage, as the Czechs wound up with plenty of the latter, but needed to conform to Warsaw Pact standards. The fact that the Czechs used a 1934 design carriage up until 1989 speaks volumes of what a good design this weapon really was.

Developed as part of a 'duo' of guns in the 1920s by Krupp, one common carriage was created for either the *10 cm Kanone 18* field gun or the *15 cm schwere Feldhaubitze 18* field howitzer. The former proved to be too light a calibre for the heavy carriage, so the main production version was the *sFH 18* howitzer. Weighing about six metric tons, the *sFH 18* was mostly deployed in battalions of three batteries of four howitzers each, and as they were too heavy for horse drayage they were towed by the eight-ton *SdKfz 7* half-track fitted with lockers for the 15 cm ammunition.

The 149mm weapon could fire a 43.5 kilogram HE-FRAG round to a maximum range of 13,325 metres. However, even though relatively plentiful in the German forces it was inferior to most of the American 155mm guns, Soviet 152mm gun-howitzers, and British 5.5in guns. Improved versions never got into production and only one self-propelled variant, the *Hummel*, saw production in meaningful numbers.

As towed artillery never seems to get the 'press' of the self-propelled types, it's not surprising that this important artillery piece has been nearly totally ignored in plastic over the years (ROCO did make a 'duo' in 1:87 scale with both the 10 cm and 15 cm barrels, as well as the *SdKfz 7* prime mover.) Once again, however, there are *two* kits of this gun due out in the coming months, and again DML is first to the front with its variant. A 'Smart Kit', their 1:35 scale model in the '39-'45 Series (Kit No. 6392) comes with a minimum of brass – only two parts and two more in etched nickel – as it covers most of the rest in well-designed plastic.

DML has pulled out all of its tricks to get a very nicely done result. The heavy rubber tyred disk wheels are 'slide moulded' with the injection mould points at the top rim of the wheel, to ensure fast and easy clean up while moulding all of the grooves in place. The same goes for the much thinner limber wheels. The trails are hollow moulded using similar techniques.

The gun proper (totally new, not borrowed from the recently upgraded *Hummel*) consists of the complete barrel in turned aluminium and a 10-piece styrene breech assembly with optional position three-piece breechblock. ('Do not cement' say the directions.) Two of the brass parts, the tubes, are used for the elevation cylinders. The nickel parts cover the gun's data plate and the stamped metal firing table placed in front of the gunner's position. The two etched brass parts are the linkages on the parking brakes.

The gun has an incredible amount of detail to it and even the limber consists of no less than 30 parts. The spades are optional position and the kit is designed so that the gun may be left assembled with a friction fit so it may be displayed either in march order (racked up, trails on the limber) or in firing position. This may not work quite as well as the directions indicate, but it is nice to know you may have a longer time frame to make a selection on towed or firing displays.

The gun comes with five HE-FRAG and five HE-FRAG concrete penetrators with 10 propellant casings and propellant covers for five. The kit also comes with a pair of unrolled wicker mats for storing clean, prepared ammunition next to the gun in firing position as well as four rounds in wicker packing and what appear to be either fuse or primer cases; all of these parts are in tan DS plastic to capture crisp features on otherwise difficult parts to mould. The sights are clear styrene parts, which seem to be popular, but still have to be painted.

A sheet of generic artillery decals from Cartograf is included along with 'kill' rings and generic ammunition placards for the packing and rounds. Five finishing schemes (three grey, one sand and one tricolour camouflage) are provided but no units or locations.

Technical assistance on this project came from Tom Cockle and Gary Edmundson, and the project director was Hirohisa Takada. Box art from Ron Volstad (he always tends to get the 'A' kits, and does them right by his artwork!)

Overall this is a welcome change and a nod to the fact that artillery pieces need 'Smart Kit' treatment too! Now for a good crew and more importantly a new prime mover to replace the 33-year-old Tamiya kit... (I would call for the Czech reserve version, but that would seem to be a cyber-hobby.com option!) 'Thanks to Freddie Leung for the review sample.

Sprue breakdown - 243 parts (223 in grey styrene, 10 x DS plastic, 3 x clear styrene, 2 x etched brass, 2 x etched nickel, 2 x brass tubing, 1 x turned aluminium)
A66 Gun cradle, trails and breech assemblies
B29 Fittings and cleaning rods
C26 Lower mount and axle details
D33 x2 Main wheels, limber wheels, trail spades
E21 Limber components
G15 15 cm ammunition
K3 Clear styrene
L10 DS plastic matting and packed shells
MA 2 etched brass
MB 2 etched nickel
MC 1 turned aluminium
MC 2 brass tubing

Dragon kits are imported into the UK by The Hobby Company Ltd., Garforth Place, Knoll Hill, Milton Keynes MK5 8PH.
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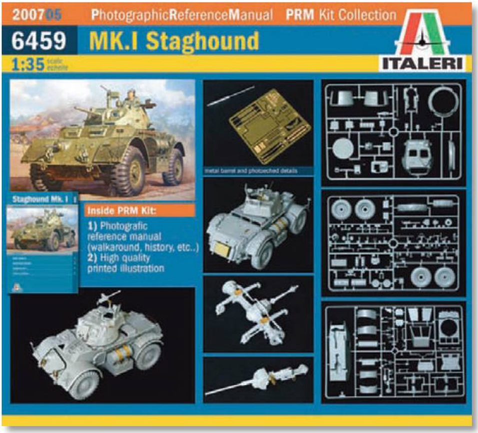
2007 05
PhotographicReferenceManual PRM Kit Collection
6459 MK.I Staghound
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ITALERI
metal barrel and photoetched details
Staghound Mk. I
Inside PRM Kit:
1) Photografic reference manual (walkaround, history, etc..)
2) High quality printed illustration

Italeri

There has been much comment on modelling Websites in recent months about the recent flurry of Allied armoured cars from WW2. Following the Bronco Staghound, the Italeri version of the same model – a Mark I 'Later Version' Kit No.6459 has arrived 'on the street' at a similar price, which means it's quite expensive to those of us used to 'Italeri prices'.

What you get in the box are four sprues, two of which are identical, a sheet of etched brass, a turned aluminium 37mm barrel, a clear sheet, decals and a piece of 'cotton wire' (*sic*). As the kit is in Italeri's 'Kit Collection' range along with the kit you get a 48-page illustrated profile (A5 size) and a copy of the box-art, which is suitable for framing. This means there is an awkward 'flappy' bit on the outside of the end-opening box as delivered.

The construction starts with a three-sided lower hull, which means the angled sides are set at the correct angle for the modeller, as opposed to the 'flat-pack' breakdown of the Bronco version. There are weld lines reproduced on the hull parts, so any sanding will need to be done carefully to avoid destroying these details. The turret has a subtle casting texture on the surfaces, though it might be necessary to enhance this with the modeller's favourite texturing product. The axles and transmission is provided and a plus point over the Bronco version the springs are provided as one-part items, however, there is a prominent mould seam along the springs which rather negates that advantage.

Without making this a complete comparison review, I think it's fair to say that the Italeri Staghound is simplified compared with the Bronco version, but the detail is still provided, an example is the driver's periscopes, provided as separate items by Bronco, but they are moulded closed by Italeri. Both a plastic and aluminium 37mm gun barrel is provided. One neat trick is that the casting numbers on the turret roof can be cut out (there is a thinned area on the reverse) and three more alternatives are provided as separate inserts. While considering the turret, a simplified radio is provided to fit into the bustle and turret basket is provided, however no other internal details are provided, which means the inside is a bit sparse if the separate hatches and doors are left open. The hatches and doors have internal detail included, but there is nothing to see through the holes.

The external tools are moulded as separate pieces and have etched straps provided for these, though the other external stowage amount to four rolled tarpaulins. This is unfortunate as the Staghounds were usually covered in external stowage boxes. There is a neat former moulded on Sprue A to facilitate the bending of the light guards.

There are five decal options provided:
British Army 7th Armoured Division, France 1944.
ARDENT 1st Belgian Brigade Group, France September 1944.
Esercito Italiano, unknown cavalry regiment, late 1950s (a small correction decal sheet is provided for this option).
1st Australian Armoured Car Squadron. BCOF, Japan 1946-48.
Polish 2nd Corps, Italy, 1944.

All these, except for the Polish option, are Olive Drab, but do not duplicate the options in the Bronco kit.

The booklet is useful in its own right; there are seven pages of black and white photos of the Staghound, mostly in Italian service in Somalia in the 1950s and 10 pages of illustrations extracted from the vehicle's technical manual. Finally, there are 22 pages of a walk around (inside and out) of a preserved Staghound in Italy and the balance of the booklet is colour profiles (three-view) for the decal options.

In conclusion, it is probably unfair to say that the Italeri kit is crude compared to the Bronco version; I think that it is more that the Italian kit is designed to be easier to construct, though most serious modellers will probably prefer the greater finesse of the Bronco kit, while some will prefer the ease of construction of the Italeri version.

I bought my kit from Mol Plastic Modelbouw www.plasticmodelbouw.nl with who I have no connection other than as a satisfied customer.

The recent articles in ***Military Modelling*** Vol.37 No.12 2007 provide excellent reference. The Hobby Company Ltd., Garforth Place, Knoll Hill, Milton Keynes MK5 8PH. Tel: 01908 605686.
Fax: 01908 605666. sales@hobbyco.net
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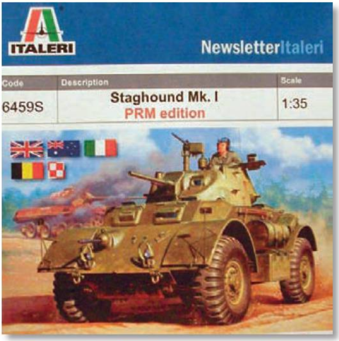

Code	Description	Scale
6459S	Staghound Mk. I PRM edition	1:35

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Alpini
Johan Somers models Italian mountain troops in a lofty and rocky location.

T-72B
Cookie Sewell provided a history on the 'Urals Tank' in this issue and in the next he shows how to model the uprated Russian MBT in 1:35 scale.

Armoured Recovery
Chris Johnson models the Ram ARV Mark II in the concluding part of his two-part feature on this WW2 armoured recovery vehicle.

Tasca's M4A1
Steve Zaloga makes a few alterations to the Tasca 1:35 scale Sherman and builds it as the famous 'Major Jim'

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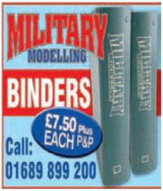

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C
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H
Historex Agents 5
Hobby Link Japan 10

K
Kit Krazy 10

L
LSA Models 8

M
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P
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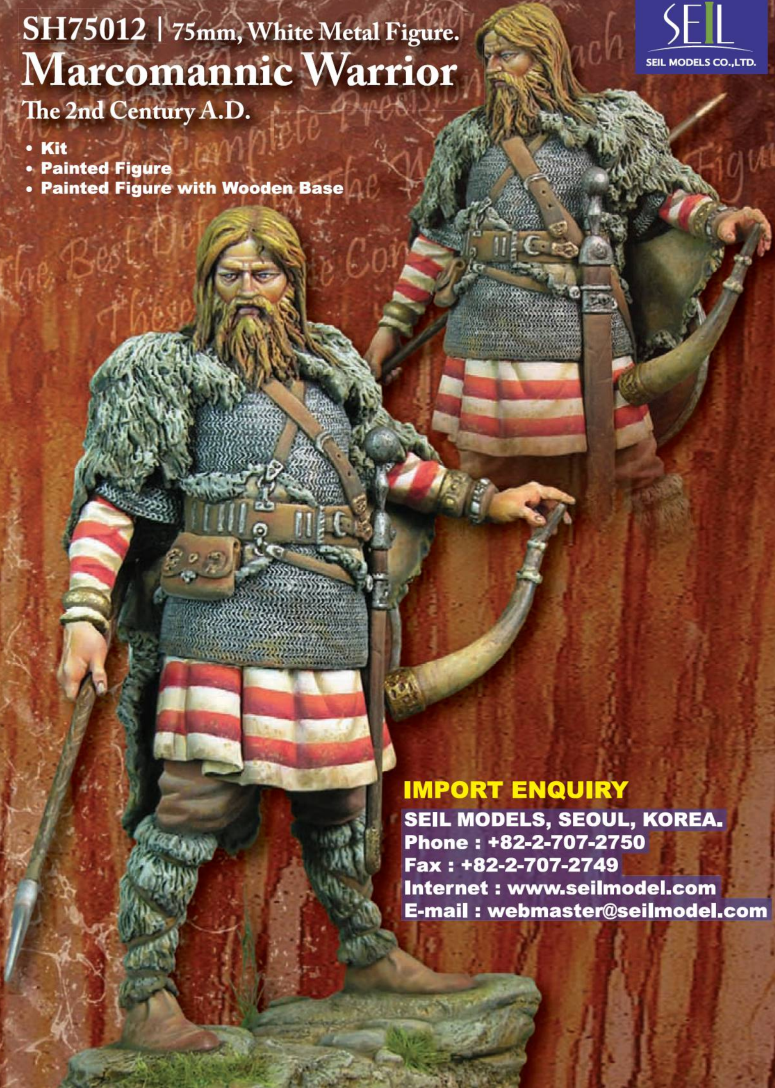

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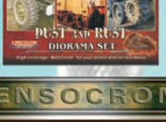

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